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AMERICA'S LARGEST TEXTILE MONTHLY

COTTON

Volume 85
Number 1,
$1.00 a Year

NOVEMBER, 1920

Published Monthly by
W. R. C. Smith Publishing Co.
Grant Bldg., Atlanta, Ga.

VALLEY
WASTE · MILLS
La Grange
Georgia

Direct Contractors for
Every Grade of Waste
from Southern Cotton Mills

TS 1550
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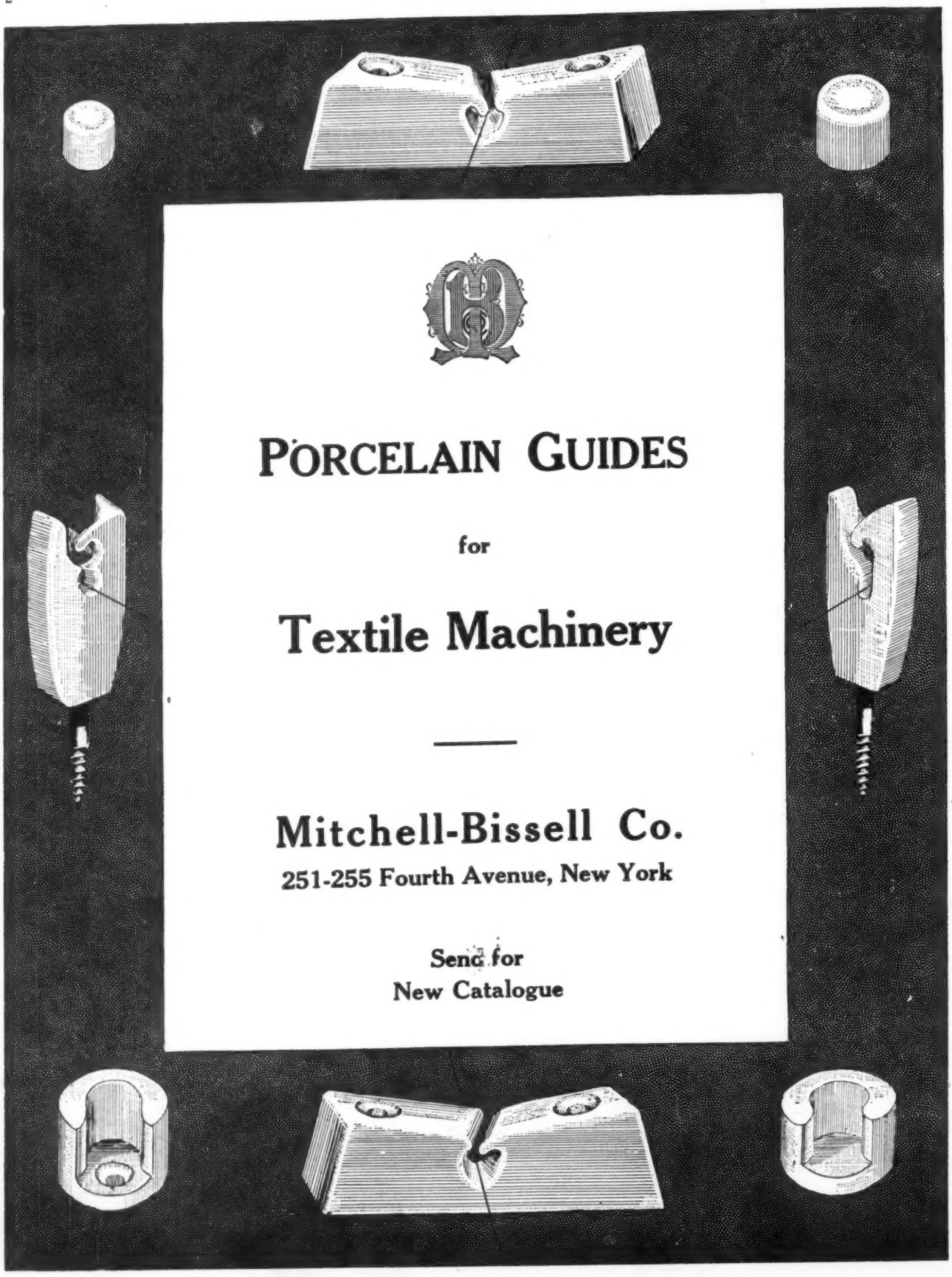

PORCELAIN GUIDES

for

Textile Machinery

Mitchell-Bissell Co.

251-255 Fourth Avenue, New York

Send for
New Catalogue

NORTHROP

TRADE-MARK REG. U. S. PAT. OFF.

LOOM REPAIRS

Our loom repairs are made from the same patterns as the parts that they replace on the Northrop looms; they are machined with the same tools, jigs and fixtures; they are made from the same high grade materials

Repairs made under our conditions are better than those made in job foundries and shops and without our interest in the working of the Northrop loom

Draper Corporation service goes with our goods

Our prices for loom and other repairs are low

We carry several hundred tons of Finished Loom Repairs in stock for the convenience of our customers

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

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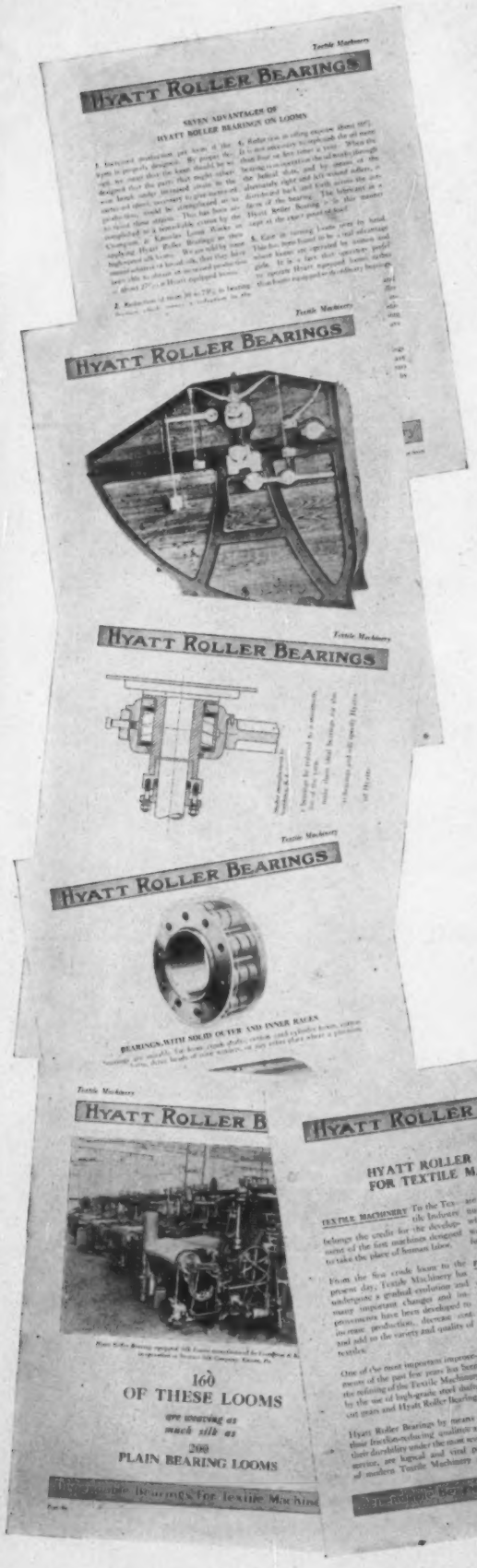


Sign Your Name and

A new Textile Machinery Bulletin has just been issued by the Hyatt Roller Bearing Company containing—

16 pages—of practical information to all textile mill owners.

Designs—showing how Hyatt Roller Bearings are applied to looms, cards, pickers, slashers, spinning and twister frames, etc.

Photographs—of actual Hyatt equipped looms, cone winders, napping machines, yarn mercerizers and fulling mills.

Results of Tests—run on Hyatt equipped looms and winders. 27% increased production was obtained on Hyatt equipped looms and 13% power saving was made possible on Foster cone winders by the use of Hyatt Roller Bearings. Read about these tests in the bulletin.

The Names of Manufacturers—who build the various types of textile machinery equipped with Hyatt Roller Bearings. Specify these modern bearings when you next order machinery from these manufacturers.

Sign your name and address in the blank space, tear out the page, mail it to us and you will get a bulletin which will make a worth while addition to your library.

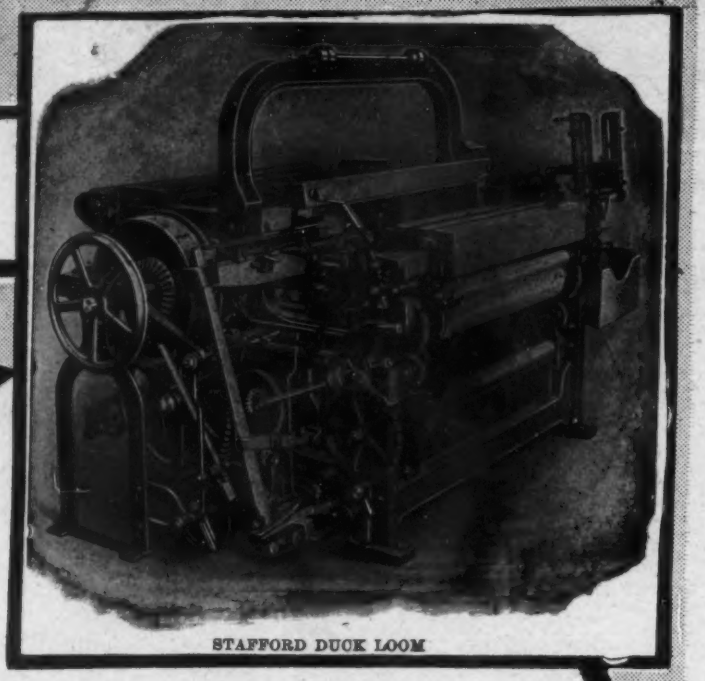
Mail the Page to Us

Sign your name and address on the blank space below, tear out the page and mail it to us. You will get a copy of our new textile bulletin No. 1905

HYATT ROLLER BEARING COMPANY
INDUSTRIAL BEARINGS DIVISION
NEW YORK, N. Y.

1973

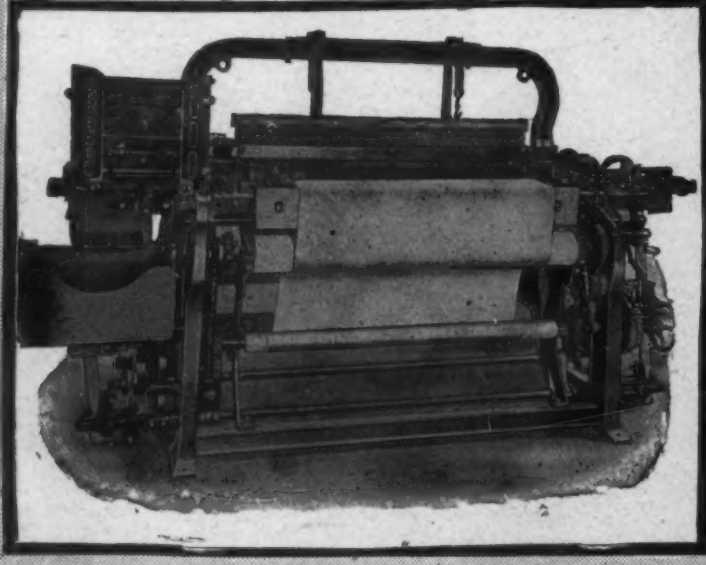
Dependable Looms



STAFFORD DUCK LOOM

The Stafford Company has for a great many years concentrated on the production of a strictly practical loom. Convincing proof of the soundness of this idea is found in the large list of repeat orders for Stafford looms from a steadily growing list of progressive mills both in this country and Canada.

THE STAFFORD COMPANY



Readville
Mass.

Southern Agent
J. H. MAYES
Charlotte
N.C.

BUY YOUR SOAPS DIRECT

There is a positive tendency in modern business methods to draw supplies from their original source. The advantages of such buying policy are so well established that it is only necessary to mention them. Quality, money value, uniformity, business responsibility, direct dealing, and service can be given by the manufacturer who sells direct and eliminates "pyramiding."

We offer the following products on the direct sales basis and assure you it is to your advantage to let us show you their good value.

LIQUID SOAPS—A toilet Soap for use in dispensers in wash rooms.

OIL SOAPS—Potash oil soaps for washing interior surfaces, automobiles, or for any use where a good quality neutral oil soap is required.

POTASH COCOANUT OIL SOAP—used as a finishing soap in **Textile** processes.

SCRUBBING SOAPS—for **General Cleaning** purposes.

Manufacturing Dept.

THE MOORE OIL REFINING CO.

CINCINNATI
OHIO

The Moore Oil Refining Co. Cincinnati, O.

WHY ARE HYATT HANGERS LIKE

Hyatt Box Mounted in 4 Point Set Screw Frame

Hyatt Box Mounted in U. G. Frame.

Hyatt Box Mounted in B & S Frame

Hyatt Box Mounted in Pioneer Steel Frame

HYATT BEARINGS

THE POINTS OF A DIAMOND DRILL?

THEY RESIST WEAR!

Like the diamonds in a diamond drill Hyatt Roller Bearing Hangers are durable---resisting wear---giving years of hard service with no appreciable wear.

For 29 years in some plants, these sturdy bearings have been running easily—operating economically—saving power and lubricant.

When these durable bearings with their chrome-vanadium steel rollers come on the job your transmission troubles are ended.

You should find out more about these capable bearings—write for our line shaft bulletin.

E-127

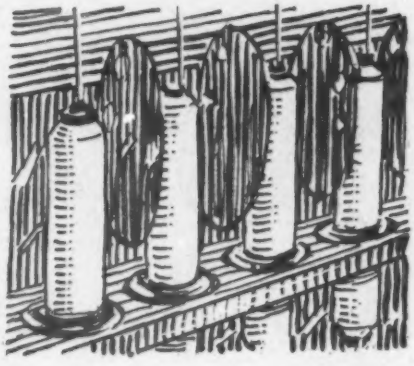
MOTOR BEARINGS DIVISION
DETROIT, MICHIGAN

HYATT ROLLER BEARING COMPANY
INDUSTRIAL BEARINGS DIVISION
NEW YORK, N. Y.

TRACTOR BEARINGS DIVISION
CHICAGO, ILLINOIS

Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools, Line Shafts, Countershafts, Concrete Machinery, Textile Machinery, Conveyors, Lift Trucks, Industrial Trucks, Railway Service Cars, Storage Battery Locomotives, etc.

FOR LINE SHAFTS



The Place of HUMIDITY IN COTTON MANUFACTURING

No. 5 Spinning

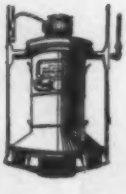
This is the last process where pounds are transformed into yards. Here is the best opportunity to make the most saving. After the yarn is wound on the bobbin—finished—no further operation makes it possible to substitute moisture for fibre.

This profit has been seized or lost.

Great care must be exercised and the humidity must be suited to staples, numbers, drafts, with great nicety. To get maximum production, a lower moisture content in the fibre may be demanded than is desirable in the finished yarn. Under these conditions yarn might be spun somewhat light, possibly one number light, but of the proper sizing. When further operations have added the moisture desired in the finished product, the counts will be correct, and the yarn will have the best possible appearance.

Regains from 7 per cent to 8 per cent are usually found advantageous. This represents relative humidities of from 50 per cent to 60 per cent and possibly sometimes even to 65 per cent.

Profit by "High Duty Climate"



Parks-Cramer Company

Engineers & Contractors

Industrial Piping and Air Conditioning

Fitchburg Boston Charlotte

Immediate Delivery!

Greist

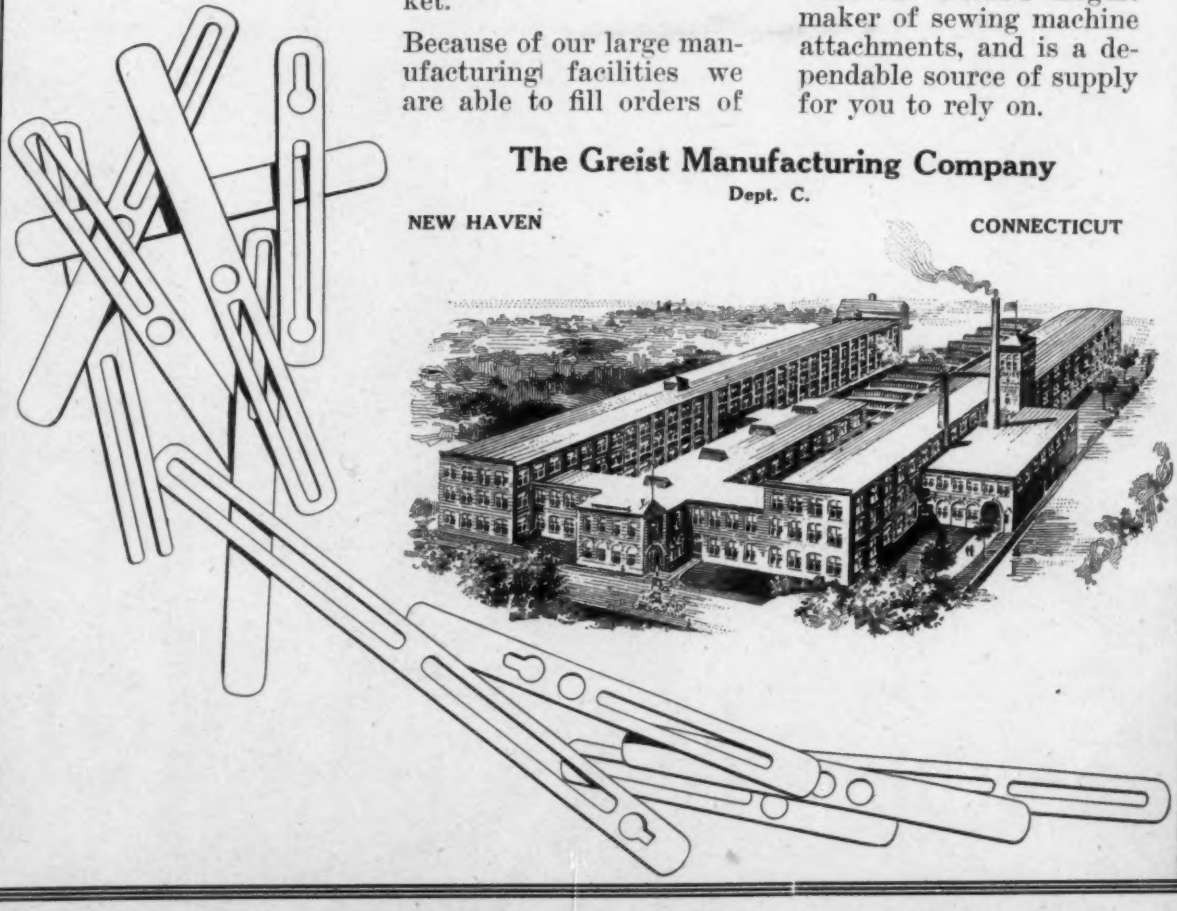
LOOM DROP WIRES

Formerly Woodbury Drop Wires

Are made of a special grade heddle wire. They are uniformly finished, accurate in design, free from burrs. A comparative test will readily convince you that they are superior to any drop wires on the market.

Because of our large manufacturing facilities we are able to fill orders of any size immediately. In addition to our many standard designs, we are prepared to make drop wires in any quantity from your own specifications.

Since 1871 the Greist Manufacturing Company has been the world's largest maker of sewing machine attachments, and is a dependable source of supply for you to rely on.



The Greist Manufacturing Company

Dept. C.

NEW HAVEN CONNECTICUT

Sturtevant
PUTS AIR TO WORK

A Loom is as Efficient As the Air Around It

Had you ever thought of it that way?

Air that is efficient eliminates absolutely, every day in the year, static electricity—the cause of broken, twisted, and knotted threads.

It keeps the air free at all times of fly. This is better for the worker and better for the machine.

It assures strength and uniformity of the goods by providing necessary atmospheric moisture which is taken up by the fibres.

Efficient air in textile mills is air supplied by

Sturtevant
(REG. U. S. PAT. OFF.)

AIR-CONDITIONING SYSTEMS

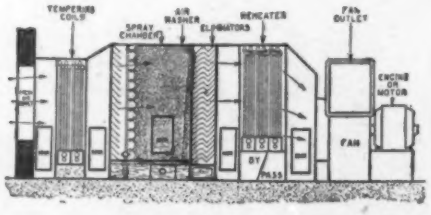
"Efficient air makes efficient looms."

A loom, although high priced, is relatively cheap in comparison to the *value* it produces. Increase this value through *more* product or *better* product and you decrease your overhead proportionately.

Sturtevant Air-Conditioning Systems stand for increased value, which they make possible through continuous production and uniform quality of product.

May we send you the booklet, "Climate Doctors," which is full of interesting reading?

Cross Section of Air-Conditioning System



Air is Always of Proper Temperature and Moisture

This sign, the symbol of the W. L. Fleisher engineering and construction organization of New York, stands for expert service in air conditioning of textile mills. This service is coupled with the quality standard of Sturtevant apparatus, and its results are guaranteed.

B. F. STURTEVANT COMPANY

HYDE PARK, BOSTON, MASSACHUSETTS

AND ALL PRINCIPAL CITIES

A Shermanized Mill
Runs Smoothly and Profitably

Sherman Service is not an expense, but in every instance has proved a profitable investment. Our files are filled with proofs of the value of Sherman Service. Read the following, which is only one of many:

Gentlemen: Having availed ourselves of your service for considerable length of time, we feel justified in writing you this letter of appreciation.

As a direct result of your efforts, our labor problems have been simplified. You have eliminated the unrest and enabled us to greatly increase the quality and quantity of our output. The suggestions we have received from your service have proven practical and valuable, and the educational campaigns have been properly cared for through the efforts of your organization.

As a whole, the service has exerted a healthy and constructive influence in our plant, and we will continue to avail ourselves of the service indefinitely. We consider the service an investment, and desire, through co-operation, to get the full benefits of it.

Yours very truly,
(Name on request.)

It takes the right methods, the scientific methods that have been worked out through long years of experience with labor, to get them feeling right, working right, on their toes every minute fighting for you and your interests. That Sherman Service is the right method has been proven and is attested to by big manufacturers all over the country—manufacturers that tried welfare work and methods of every description in trying to solve their labor problem and then found that Sherman Service was the only real way.

All our experience, all our knowledge and activities can be swung directly into your mill among your operatives. Let us demonstrate in your plant our ability to develop understanding between you and your employees and insuring a well-knit organization of loyal producers. Our methods will make your present welfare and educational plans 100% effective, and perhaps save you much money that might be wasted.

Let us send you an interesting little booklet today. Have your stenographer drop us a line today requesting it.

SHERMAN SERVICE INC.

Production Engineering
Industrial Co-ordination

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Cleveland
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Pittsburgh
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Chicago
208 So. La Salle
Detroit
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Philadelphia
1211 Chestnut St.
New Haven
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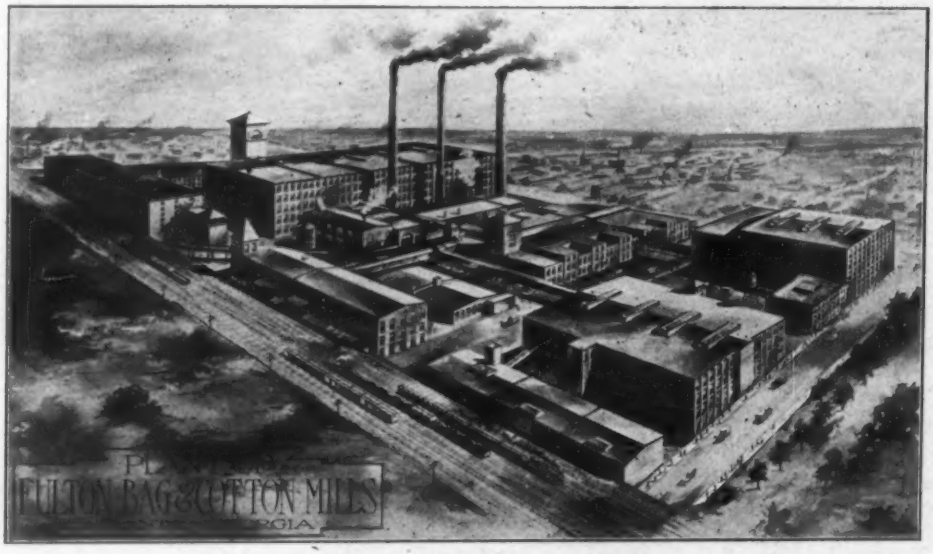
Largest organization of its kind in the world.
Founded April 7, 1910.

SHERMAN SERVICE

"Sirocco"
TRADE MARK

In Southern Cotton Mills



One of the Southern Mills using "A B C" Equipment

Getting the Most From Production

Is your production keeping pace with your demands? Are your workers giving you the kind of assistance which sends the orders flowing like a stream to your shipping room?

If you would check up on the cause of lack of production in many textile plants today you would find it is due in a big extent to lack of consideration of the workers' needs and better working conditions. The plant which is properly ventilated is a big step in the right direction. You can get more from employees who work where the air is fresh and pure than can ever be possible in the poorly ventilated plant.

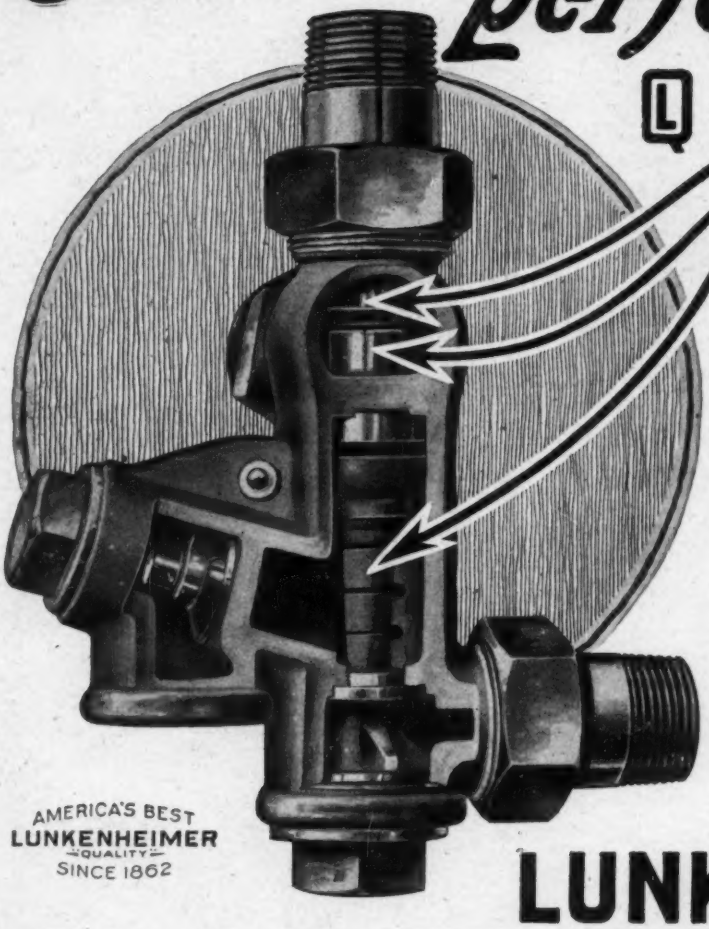
Our business is supplying equipment which insures fresh clear air and the heating and ventilating of industrial plants and public buildings. Our experience enables us to work with you in properly planning the right ventilation for your plant.

If you are interested why not get in touch with us?

American Blower Company

DETROIT, MICH.

Consistent performance



The correct design of the tubes and the large areas through the body of

AMERICA'S BEST
LUNKENHEIMER
—QUALITY—
SINCE 1862

LUNKENHEIMER AUTOMATIC INJECTORS

account for the excellent service which they give. They deliver more water per pound of steam, have full capacity at higher steam pressure, and their capacity is diminished in a lesser degree by long lifts and hot feed water than any other.

The tubes being made of a **special hard bronze,** resist the severe erosive action of the saturated flow at high velocity, and the Lunkenheimer design of "spill" eliminates the uneven wear of the combining tube which is the cause of most injector trouble.

Lunkenheimer Injectors are highly efficient, reliable and economical boiler feeders. Their wide range of operation; instantaneous restarting after a temporary interruption of the steam or water supply; their durability and the interchangeability of all parts are points which merit consideration and recommend their installation.

Specify LUNKENHEIMER and insist on having the genuine.

Distributors of Lunkenheimer Products situated in every commercial centre.

THE LUNKENHEIMER CO.
—"QUALITY"—

Largest Manufacturers of
High Grade Engineering Specialties
in the World

CINCINNATI

New York Chicago Boston London

Export Dept., 129-135 Lafayette St.,
New York

19-16-10

SACO-LOWELL CARD STRIPPER

DUSTLESS AND AUTOMATIC

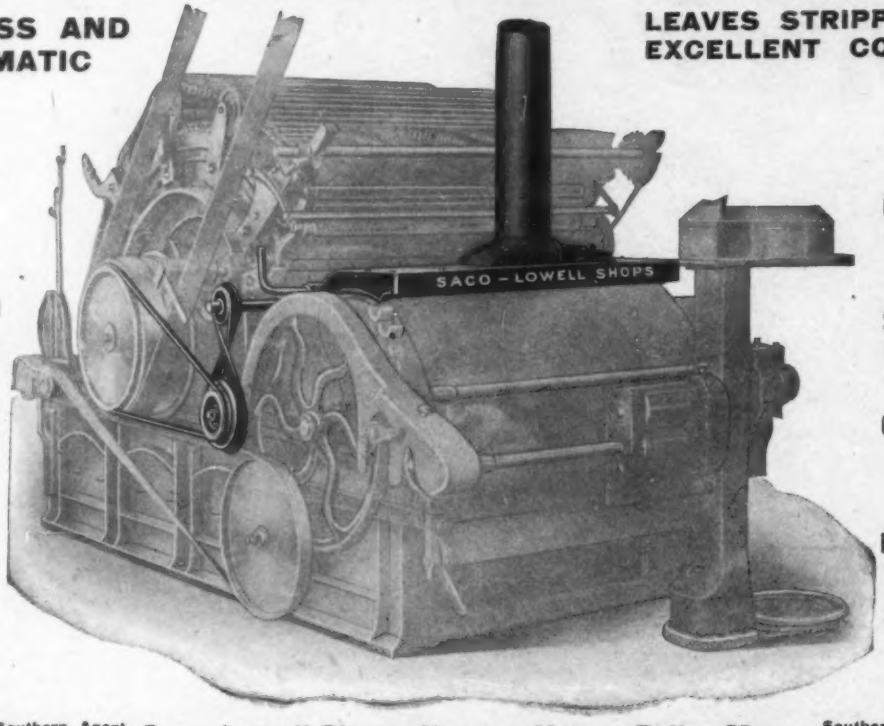
LEAVES STRIPPINGS IN EXCELLENT CONDITION

Economical to Operate

Saves Time and Labor

Strips Card Clean

Sanitary and Efficient



Low Cost of Maintenance

Simple, Durable Practical

Control Always Absolute

Full Information Furnished

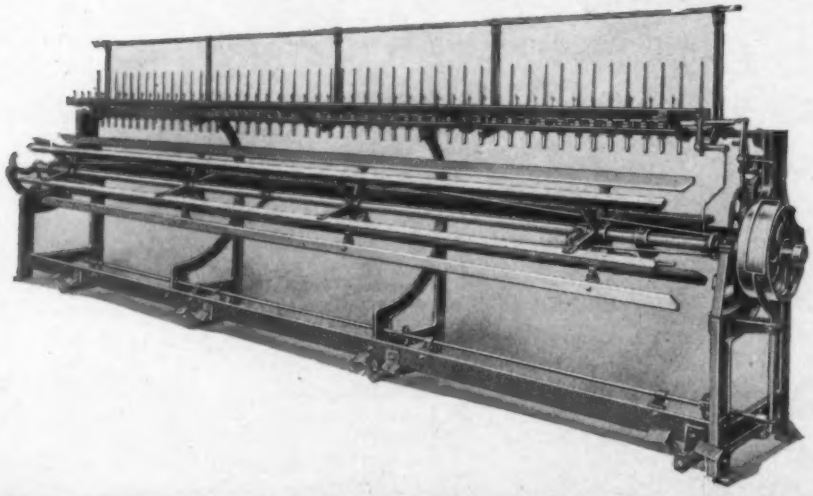
Rogers W. Davis, Southern Agent CHARLOTTE, N. C. **Saco-Lowell Shops, Newton Upper Falls, Mass.** Southern Branch Office GREENVILLE, S. C.

WHITIN MACHINE WORKS

ESTABLISHED 1831

TEXTILE MACHINERY

Makers of Reels for All Kinds of Yarns



MAIN OFFICE AND WORKS

WHITINSVILLE, MASS., U.S.A.

SOUTHERN OFFICE CHARLOTTE N.C.

INVARIABLY

INDUSTRIAL PLANTS ARE ENVEIGLED INTO PURCHASING MOTION PICTURE EQUIPMENT THAT IS TOTALLY UNFIT AS WELL AS UNSAFE FOR THEIR PURPOSE.

MOVING PICTURES

WHEN PRESENTED PROPERLY ARE OF VAST IMPORTANCE TOWARD KEEPING YOUR EMPLOYEES SATISFIED. THEY ARE ENTERTAINING AS WELL AS EDUCATIONAL.

SIMPLEX PROJECTORS

ARE PARTICULARLY ADAPTABLE FOR COTTON MILLS ON ACCOUNT OF THEIR EXTREME **SIMPLICITY, DURABILITY** AND **SAFETY FEATURES.** BEFORE PLACING YOUR ORDER IT WILL PAY YOU TO LET US SHOW YOU THE SUPERIOR POINTS OF THE **SIMPLEX**—THE ADMITTEDLY PERFECT PROJECTOR THAT THE MAJORITY OF THE WORLD'S FINEST THEATRES, MANUFACTURING PLANTS, Y. M. C. A.'S, SCHOOLS AND CHURCHES ARE USING.

BUT A FEW INDUSTRIAL PLANT INSTALLATIONS MADE BY US:

Fulton Bag and Cotton Mills, Atlanta, Ga.
Interstate Cotton Mills, LaGrange, Ga.
Interstate Cotton Mills, Hogansville, Ga.
Aluminum Company of America, Maryville, Tenn.
Langdale Mills, Langdale, Ala.
Cliffside Mills, Cliffside, N. C.
Southern Textile Exposition, Greenville, S. C.
Chickasaw Shipbuilding Co., Mobile, Ala.
Bertha Mineral Co., Austin, Va.
Riverdale Cotton Mills, Riverview, Ala.
Summerville Cotton Mills, Summerville, Ga.

——OTHER NOTABLE USERS——

DuPont Powder Co., Hopewell, Va.
Goodrich Rubber Tire Co., Detroit, Mich.
Packard Motor Car Co., Detroit, Mich.
Elkhorn Coal Co., Wayland, Ky.
New Orleans Lt., & Ry. Co., New Orleans, La.
New River & Pocahontas Coal Co., Leyland, W. Va., and two branches.
Campbell Coal Mining Co., Eagan, Texas.
Campbell Coal Mining Co., Habersham, Tenn.
Consolidated Coal Co., McRoberts, Ky.
Consolidated Coal Co., W. Va., No. 1.
Winding Gulf Colliery Co., Winding Gulf, W. Va.
Wm. Cody Lumber Co., McNary, La.
Republic Coal Co., Republic, W. Va.
General Chemical Co., New York City.
Nichols Chemical Co., New York City.
Shell Oil Co. of Cal., Coalings, Cal.

ALSO

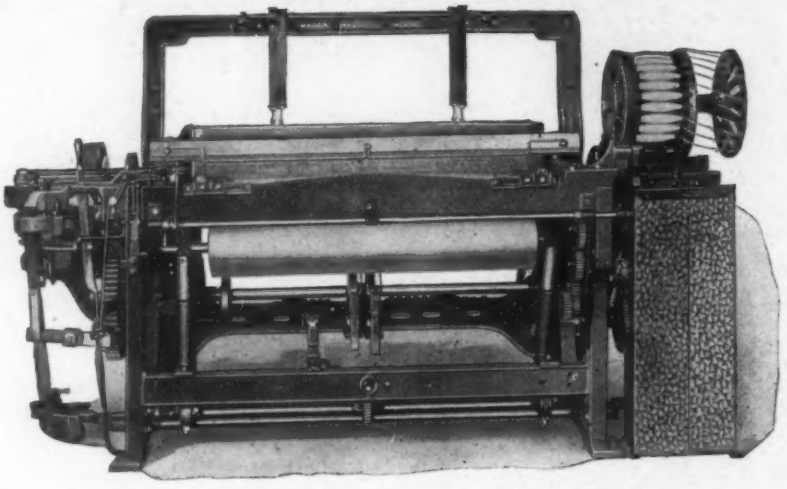
66 Regular Army Posts, a score of Army Camps and the majority of America's Finest Theatres.

LUCAS THEATRE SUPPLY CO.

ATLANTA **158 Marietta Street** **GEORGIA**

"AMERICA'S GREATEST MOVING PICTURE EQUIPMENT HOUSE"

Mason Automatic Loom



With Battery, Warp Stop Motion, Feeler and Shuttle Lock

RANDOLPH CROMPTON'S PATENTS

Fewer Parts Standard Construction Rebounding Shuttles Overcome Damage to Bobbins and Shuttles Prevented

We also build Revolving Flat Cards; Drawing Frames, Ring Spinning Frames; Duck Looms in various widths and weights; Silk Looms—Single Box and Two Box; Wide Sheeting Looms.

Mason Machine Works Co., Taunton, Mass.

E. HOWARD, Southern Agent, Greenville, S. C.

Many Who Spend Much Time and

effort in standardizing their products and process of manufacture, often overlook the question of standardizing their facilities for handling work in process, raw materials, and waste.

Diamond-F Receptacle Service has been developed especially for this purpose and includes the fitting of the proper receptacle to the job, as well as supplying the receptacles.

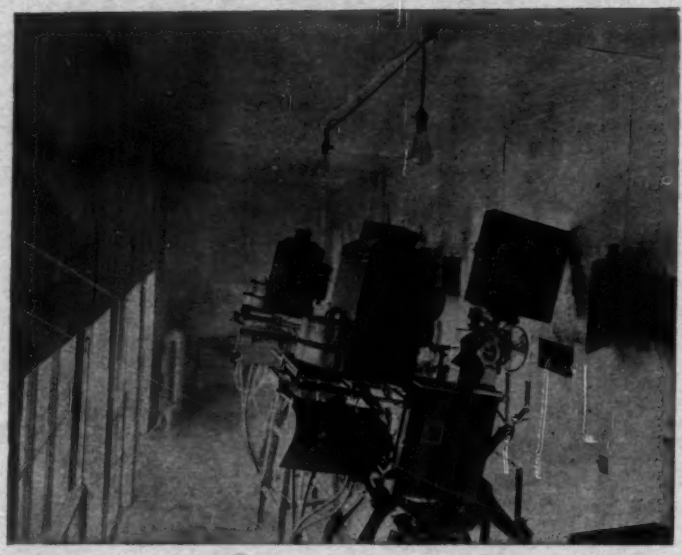
Write for "Diamond-F Receptacles"

Dept. WZ

Diamond State Fibre Company Bridgeport, near Philadelphia, Penna.

Branch Factory and Warehouse, Chicago, Ill.
Offices in Principal Cities.
In Canada: Diamond State Fibre Co. of Canada, Ltd., Toronto.

Better Motion Pictures For Textile Mill Employees



Showing Installation of Power's 6 B Motion Picture Machines in the Tucupau Mills Theatre.

Showing Interior of Tucupau Mills Theatre, Tucupau, S. C.

THE textile industry is demanding the best moving pictures for their employees, and that is why more

POWER'S PROJECTORS

are used by textile mills in the South than all other projectors combined.

Here Are a Few of the Mills Using Power's

Exposition Cotton Mill	Atlanta, Ga.
Bibb Manufacturing Co.	Columbus, Ga.
Bibb Manufacturing Co.	Porterdale, Ga.
Gainesville Cotton Mill	Gainesville, Ga.
Habersham Mill	Habersham, Ga.
Hillside Cotton Mill	LaGrange, Ga.
Manchester Mill	Manchester, Ga.
Milstead Mill	Conyers, Ga.
Thomaston Cotton Mill	Thomaston, Ga.
Roswell Manufacturing Co.	Roswell, Ga.
Trion Company	Trion, Ga.
Rocky Mount Cotton Mill	Rocky Mount, N. C.
Rodman-Heath Cotton Mill	Warhaw, N. C.
Pomona Mills	Greensboro, N. C.
Cleveland Mill & Power Co.	Lawndale, N. C.
Spray Cotton & Woolen Mills	Spray, N. C.
Issaquena Mills	Central, S. C.
D. E. Converse Co.	Glendale, S. C.
Monoghan Mills	Greenville, S. C.
Woodside Mills	Greenville, S. C.
Pacolet Manufacturing Co.	Pacolet, S. C.
Tucupau Mills	Tucupau, S. C.
Victor Mills	Greer, S. C.
Victor-Monoghan Mills	Seneca, S. C.
Victor-Monoghan Mills	Walhalla, S. C.
Victor-Monoghan Mills	Jonesville, S. C.
Ware Shoals Manufacturing Co.	Ware Shoals, S. C.
Glenn-Lowry Manufacturing Co.	Whitmire, S. C.
Lanett Mills	Lanett, Ala.
Indian Head Mills	Cordova, Ala.
Selma Manufacturing Co.	Selma, Ala.
Central Mills	Sylacauga, Ala.
Tallahassee Falls Manufacturing	Tallahassee, Ala.

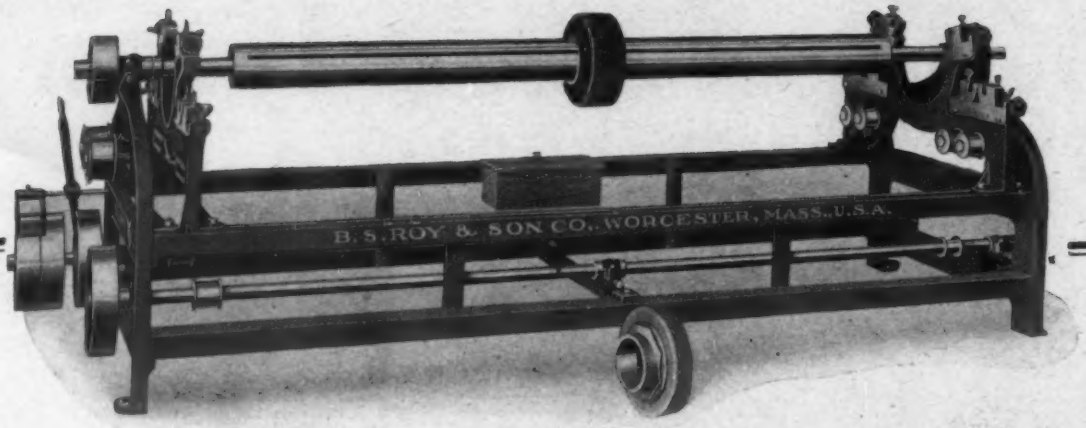
Our experience in Theatre Equipment is at your service

"WE HAVE A SPECIAL OFFER"

Southern Theatre Equipment Company

No. Nine Nassau St.
ATLANTA, GEORGIA

Eighteen Fifteen Main St.
DALLAS, TEXAS



There Are Cheaper Grinders Than Roy Grinders But None Less Expensive

Napping and carding machinery represents a considerable investment to any mill, so who wants to risk their high-priced machinery on a cheap grinder or even on a grinder that costs more than a Roy but doesn't produce uniform satisfaction throughout a long life? There may be cheaper grinders than the Roy, but you will find the Roy the least expensive in the long run.

The careful buyer—those who select only after an investigation of all other makes—invariably choose the Roy. There's a reason.

Tell us your needs and let us suggest the Roy Grinder to perfectly meet them.

WRITE TODAY FOR BULLETINS

B. S. ROY & SON CO., Worcester, Mass.

Established 1868

E. M. TERRYBERRY, Southern Agent, 1126 Healy Bldg., Atlanta, Ga.

THE SIMPLEST AND THE MOST ELABORATE

FABRICS

Are produced on

LOOMS

From the

Crompton & Knowles Loom Works

WORCESTER, MASS.

Providence, R. I. Paterson, N. J. Philadelphia, Pa.

Alexander & Garsed, Southern Representative, Charlotte, N. C.

HELP *your* HELP

and they will satisfy you

Provide Proper Recreation

---billiards and bowling
a clean sport

To exercise RIGHTLY *Means To PLAY!*

Bowling is the sport where you can PLAY and EXERCISE any old time —and regardless of the weather.

Let us Advise and Assist YOU in Providing

Recreation

that will

Keep YOU and YOUR EMPLOYEES

Physically Fit

Write for full information.

The Brunswick-Balke-Collender Co.

623-633 South Wabash Avenue
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Branches in All Cities

BILLIARDS AND BOWLING

The Advertising Value of

CLEAN FLOORS

in American Business

"Our floors are CLEAN!"

What a world of meaning in these four words!

What confidence they inspire!

Is it a factory? Then surely the output must be CLEAN, since *even the floors* are CLEAN.

Is it a store? Merchandise, clerks, atmosphere, even the very selling methods must be CLEAN.

Is it a hotel? The suggestion of home-like comfort is a certain appeal to the refined.

Is it an office building? Certainly there could be no more reliable assurance of all-around CLEAN service to tenants.

Many business men *think* they can truthfully say.

"Our floors are CLEAN!"

But mopping and scrubbing by hand do not guarantee cleanliness. They cannot be thorough.

Thousands of business men, however, *can* advertise their CLEAN FLOORS, for the Finnell System of Power Scrubbing is a positive guarantee of cleanliness.

Look for Finnell-scrubbed floors and you'll find *really* CLEAN FLOORS.

Free literature on request. Please address Chicago office.

A few of the mills where the value of CLEAN FLOORS is recognized and the

FINNELL SCRUBBER

is used to maintain them:

Altavista Cotton Mills
Dan River Mills
Carolina Cotton & Woolen Mills
Erwin Cotton Mills
Whitney Manufacturing Co.
Dunean Mills
Tucupau Mills
Pacific Mills
Hamilton Carhardt Mills
Cannon Manufacturing Co.
Loray Mills
Wiscassett Knitting Mills
Union Buffalo Mills
Salisbury Cotton Mills
Appalachian Mills
Forstman & Huffmann
Crown Manufacturing Co.
American Thread Co.—5 Mills
Arlington Mills
Wood Mills
Shenandoah Mills
Viscose Manufacturing Co.
Aberfoyle Manufacturing Co

AMERICAN SCRUBBING EQUIPMENT CO.

Also manufacturers of Finola Scouring Powder

General Offices: 188 N. Wabash Ave., Chicago Factories: Hannibal, Mo.

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ATLANTA	BUFFALO	DENVER	LOS ANGELES	NEWARK	PHILADELPHIA	SALT LAKE CITY
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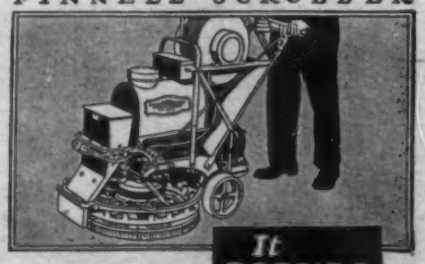
BOSTON	CINCINNATI	INDIANAPOLIS	MILWAUKEE	NEW YORK	PROVIDENCE	SEATTLE
	CLEVELAND	KANSAS CITY	MINNEAPOLIS	OMAHA	ST. LOUIS	

FINNELL SYSTEM

OF POWER SCRUBBING

FINNELL SCRUBBER



It SCRUBS *Electrically!*

"CLEAN FLOORS Reflect Clean Business"

TUEC
STATIONARY CLEANERS
TRADE MARK REGISTERED

Better Than Fans and Blowers

Made in 5 sizes to meet any requirement.

IN many textile mills and factories where formerly fans and blowers were used to protect workers from flying lint, dust and dirt produced by machines

The Tuec Suction Cleaner

has proved far more efficient and satisfactory. Instead of scattering dust and lint the TUEC *consumes* it and deposits it directly in its tank.

If you are using a fan or blower in your mill, if your janitors are wasting hours and dollars for the want of a Suction Cleaning Plant for floor cleaning and the removal of lint and dust from machinery, it will surely pay you to investigate and learn what the Tuec is doing for others.

Tuec Stationary Suction Cleaners are used everywhere—in cotton mills, textile mills, plants for the manufacture of electrical apparatus, coal pulverizing, Portland cement and rubber goods plants, wire mills, carpet mills, cereal mills, powder mills, paper box and wood working plants, printing plants, machine shops, laboratories and scores of others.

Our advisory service is complete and reliable. Write for catalog.

The United Electric Company - Canton, Ohio

New York Chicago Cleveland Toronto, Ont

It Gets the Dirt Where Dusters, Brooms and Brushes Fail.

Doing Two Men's work without a Hitch

Here's a miniature of the catalog "The One-Man Method." In it you will find illustrated just the McKinney Truck to fit your particular needs. Send us your name and address and your copy will reach you with despatch.

No helpers needed here. Every man can do his work alone. Before McKinney Service was installed they worked in pairs—one to help lift the load in place and the other to push the truck.

The McKinney One-Man Truck gave every man a producing job. Transportation took a jump. Twice the amount of work was done with the same labor. Overhead was chopped in half. The trucks have paid for themselves in savings made.

Another thing! Motor truck drivers take a McKinney Truck with them. It saves time at the unloading point and makes more trips possible.

Is your trucking department handicapped with its equipment? Are deliveries slow—motor stops too long? Here's a way to speed them up and slow down expense.

McKinney One-Man Trucks are light but rugged. Easy to operate—throw the steel package holder over the box, bale or barrel, pull back and the load is on its way. No bumping, banging or sticking for the load and no strain and less fatigue for the truckman. There's a truck to fit every type of merchandise. All are narrow gauge to fit narrow aisles.

Information on the McKinney One-Man Truck is arranged in catalog form. You can grasp the facts at a glance. This catalog will be sent upon request.

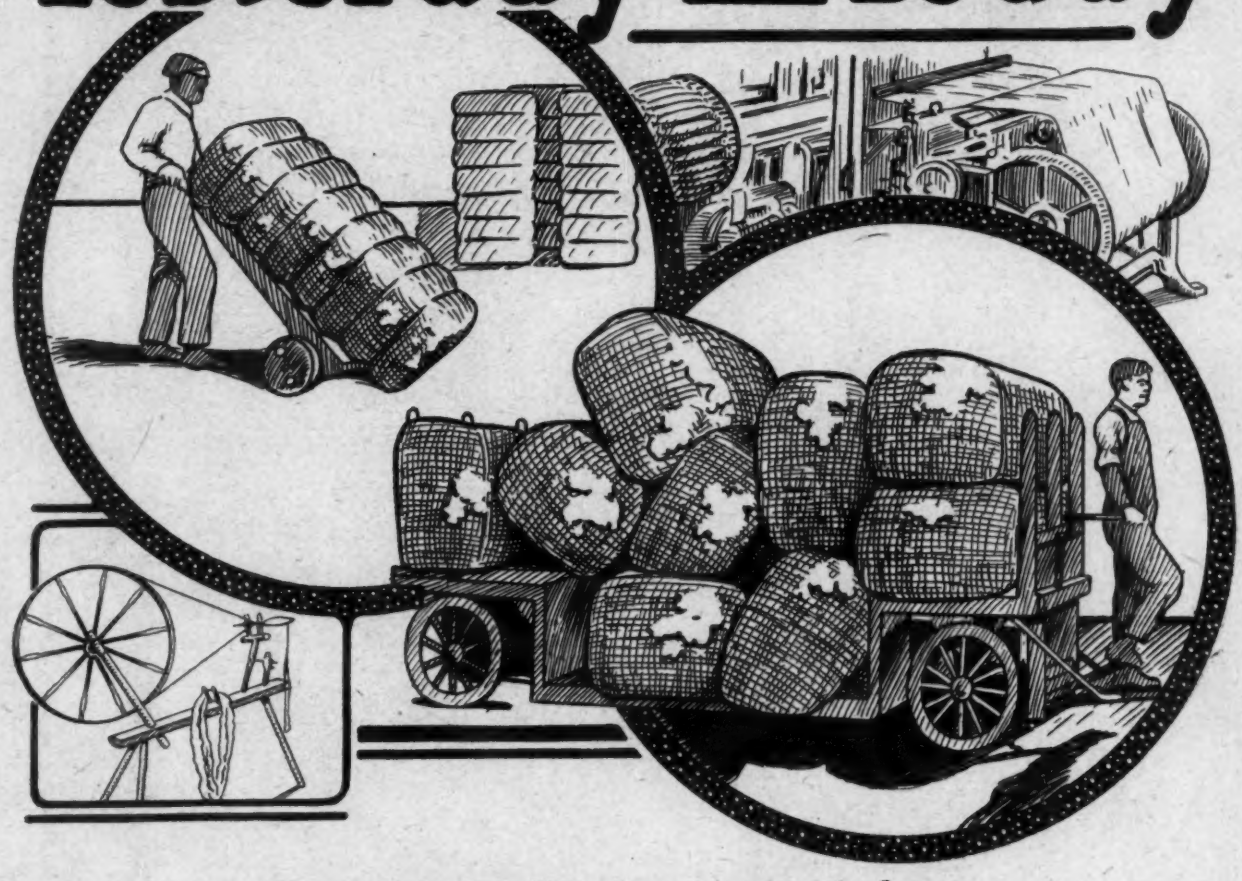
McKinney Manufacturing Company
Pittsburgh

Export Representation
The Lovingood Company, Atlanta, Ga.

Also manufacturers of McKinney Hinges and Butts, garage and farm building door-hardware and furniture hardware.

McKINNEY *one-man* TRUCKS

Yesterday and Today



From Spinning Wheels to Automatic Looms
From Hand Trucks to Elwell-Parker Electrics

Yesterday's plans have been discarded because present day efficiency demands time and labor saving equipment. The old style spinning wheel is no more out-of-date and inefficient than the hand-trucking method of hauling. Present day efficiency demands Elwell-Parker Trucks just as much as automatic looms.

One Elwell-Parker Electric Truck in your mill will enable one man to do the hauling that it took six to ten men with hand trucks. The actual saving can be figured in several different ways, all of which are obvious to you, and the increase in efficiency is not to be scorned during these times of big production.

Our engineering staff is at your service and will be glad to investigate your haulage problem, and prescribe the right truck for your particular trucking conditions, and bring trucking methods in your mill up to present-day efficiency. Write us today for booklet.

The Elwell-Parker Electric Co.
Pioneer Builders of Electric Industrial Trucks
CLEVELAND, OHIO
Offices in Principal Cities.

Elwell-Parker
ELECTRIC INDUSTRIAL TRUCKS

"Dat sho' am a handy baby, Boss"

"Yas, suh, I don't need no nigger helping me when I use dat Handy Andy truck, cause, Boss. dat baby jus nachelly lifts dem heavy bales by itself, and it lifts 'em without gettin underneath 'em too. Why Boss, I can load fifteen hunnard pounds on dat truck without any help and do it quicker dan I usta could with dem old style trucks with two niggers helping me."

The HANDY ANDY ONE MAN TRUCKS are no experiments but are being used in some of the largest plants in this country. Their success is due to their simple strong features that can be found in no other truck. It is a one man truck and lever on wheels. It lifts the package without getting under it. It can be used in cramped places and with the boxes or packages against the walls. No helpers needed. One man and the Handy Andy handles the heaviest packages.

Let us tell you about the many features of this time and labor saving little truck, and the secrets of how it accomplishes its work so easily.

Handy Equipment Corporation

PEORIA, ILLINOIS.

J. KIRK ROWELL CO., Dist. Mgr.

716 Atlanta Trust Bldg., Atlanta, Ga.

HANDY ANDY

ONE MAN

TRUCK

HANDY EQUIPMENT CORP.

PAT'D FEB'20

Type B

With

Movable Axle

BACK POSITION

FRONT POSITION

FIRST
in Mileage

THIS company publishes annually a list of White Trucks reported to us by their owners as having rounded out 100,000, 200,000 and 300,000 miles, still in active service.

Spread over such mileages, the investment in White transportation is a small item indeed. It is written off the books long before the truck's *earning power* is impaired.

Summary of 1920 List

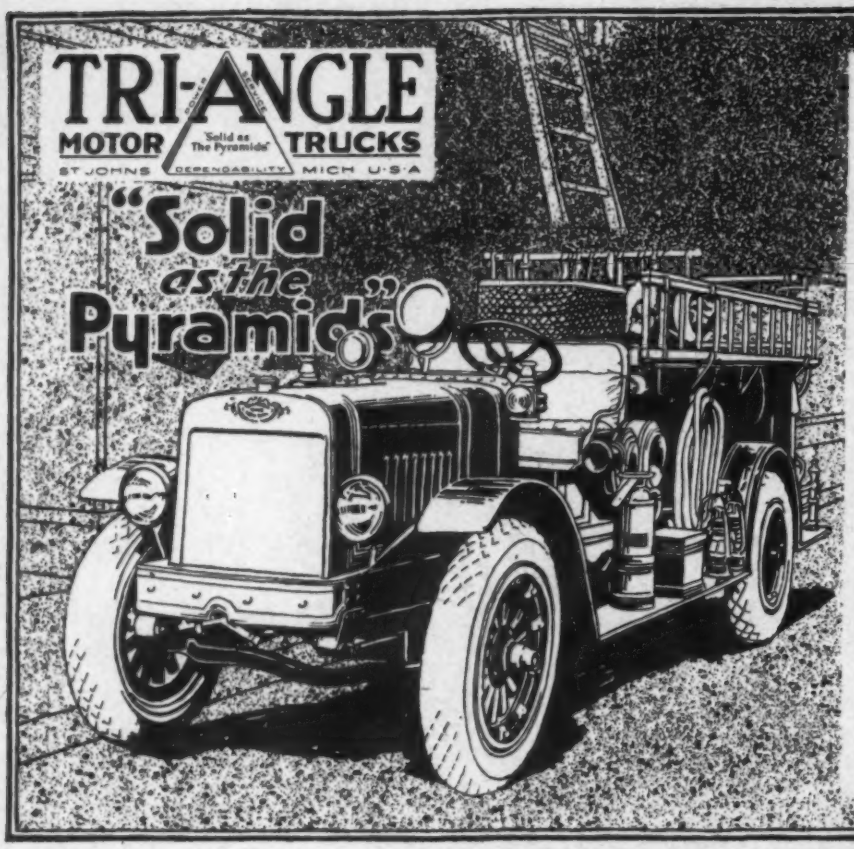
Number of Owners	Number of Trucks	Mileage
14	28	300,000 miles and more
55	95	200,000 to 300,000 miles
86	124	150,000 to 200,000 miles
304	558	100,000 to 150,000 miles

The detailed list covers two full pages in the Saturday Evening Post of November 13th and in other national publications.

The majority of the trucks included in this list are necessarily among the first built by the company. Their number is already so large in proportion to the early output as to indicate that 100,000 miles is universal for veteran White Trucks. Even 200,000 miles is not an uncommon performance.

THE WHITE COMPANY, *Cleveland*

WHITE TRUCKS



THE *Power, Dependability,* and *Short Turning Radius* of the TRI-ANGLE 1½-, 2- and 2½-ton models commend them specially to fire-fighters.

These same qualities, (with low upkeep,) also make them valuable investments for farm, creamery and dairy use.

When equipped with pneumatic cords, their superior speed especially fits them for long distance hauling.

Our booklet "The Why of TRI-ANGLE Trucks" explains. Write for it.

Address Dept. Z.

TRIANGLE MOTOR TRUCK COMPANY

St. Johns, Mich., U. S. A.

Eastern Representative
Triangle Motor Sales Co.
381 Fourth Ave.
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New England Distributors
Eugene F. Lally and Sons Co.
Boston, Mass.

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White Hickory
BUILT ON HONOR

Judge Them By The Miles of Service

Miles of Service are assured by these Units.
Continental Red Seal Motor, Eiseman High Tension Magneto, Sheldon or Timken Worm Drive Axles, Timken Bearings and all other units of highest standard grade.

The initial cost of a motor truck is only a percentage of the total transportation cost. It is *Miles of Service* that count.

You can rely on White Hickory Trucks. They stand up under adverse conditions—they give miles of service at an extremely low hauling cost, with any kind of a load, on every kind of road.

Back of the White Hickory Truck is the forty year record of the White Hickory Wagon.

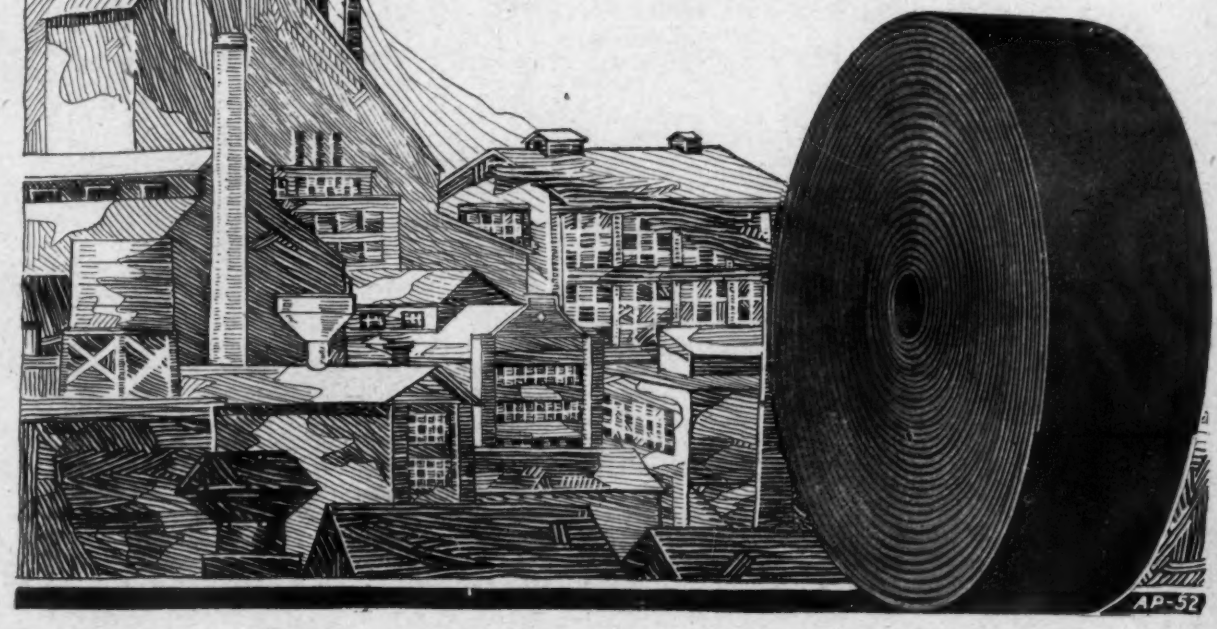
White Hickory Motor Corporation
Atlanta, Georgia, U. S. A.

Ladew

Since 1835

It's up to you whether your belting equipment is an expense or an investment. "You pays your money, and you takes your choice." If you buy with the idea of getting the most belt for the least money, your belting equipment will be an expense. What else can you expect? And if you buy with the view to getting the most belting service per dollar paid, you'll have made a power-saving, production-maintaining investment that will prove mighty profitable. It is the investors in Hoyt Leather Belting that have maintained the House of Ladew for 85 years and made it the biggest leather-belting concern in America.

EDW. R. LADEW CO., INC.
NEW YORK, N.Y., U.S.A.
Since 1835
Branches and Distributers, with Complete Stocks, in All Principal Cities



Textile Quality Depends On The Condition of Your Pickers

The picker room regulates the quality of the yarn. The condition of the beater and fan bearings governs the quality of the output of the picker.

Badly worn bearings mean poor, smudged lap and wasted oil. Strom ball bearings with their extra large balls and heavy deep-grooved raceways keep the beaters in permanent, perfect adjustment.

They save power and require a trifling amount of oil applied about four times a year. They reduce maintenance expenses and eliminate picker shutdowns and hot boxes. They keep the oil out of the lap.

Equip your beaters and fans with these dependable bearings. In the Southern territory our distributor, The Aldrich Machine Works, Greenwood, S. C., carry complete equipment to fit any make of picker.

U. S. Ball Bearing Manufacturing Co.

(Conrad Patent Licensee)

4544 Palmer St., Chicago, Ill.

61

Strom BEARINGS

The CHICAGO Line

Pioneers in Ball Bearing Power Transmitting Appliances

In 1911 the Chicago Pulley & Shafting Co. made the first installation of S K F Ball Bearing Hangers in the city of Chicago.

This installation was made only after many tests were conducted to demonstrate the efficiency, durability and economy of Ball Bearings for Power Transmission.

Since 1911 four thousand shops, factories and plants in Chicago alone have adopted and are installing the Ball Bearing Specialties of The Chicago Line, which consists of

Daggett Ball Bearing Loose Pulley and Clutch Pulley
Ball Bearing Hangers
Ball Bearing Pillow Blocks
"All Loose" Drive, etc.

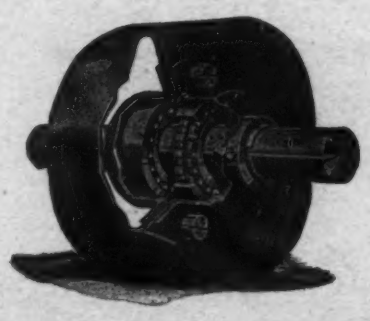
All S K F Ball Bearing equipped.

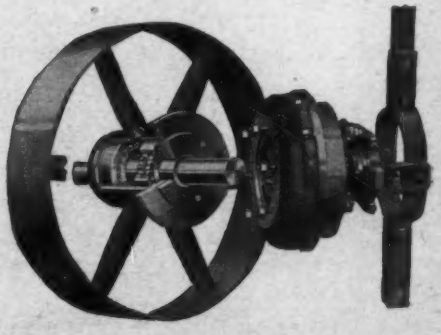
Further information gladly furnished.

Chicago Pulley & Shafting Co.

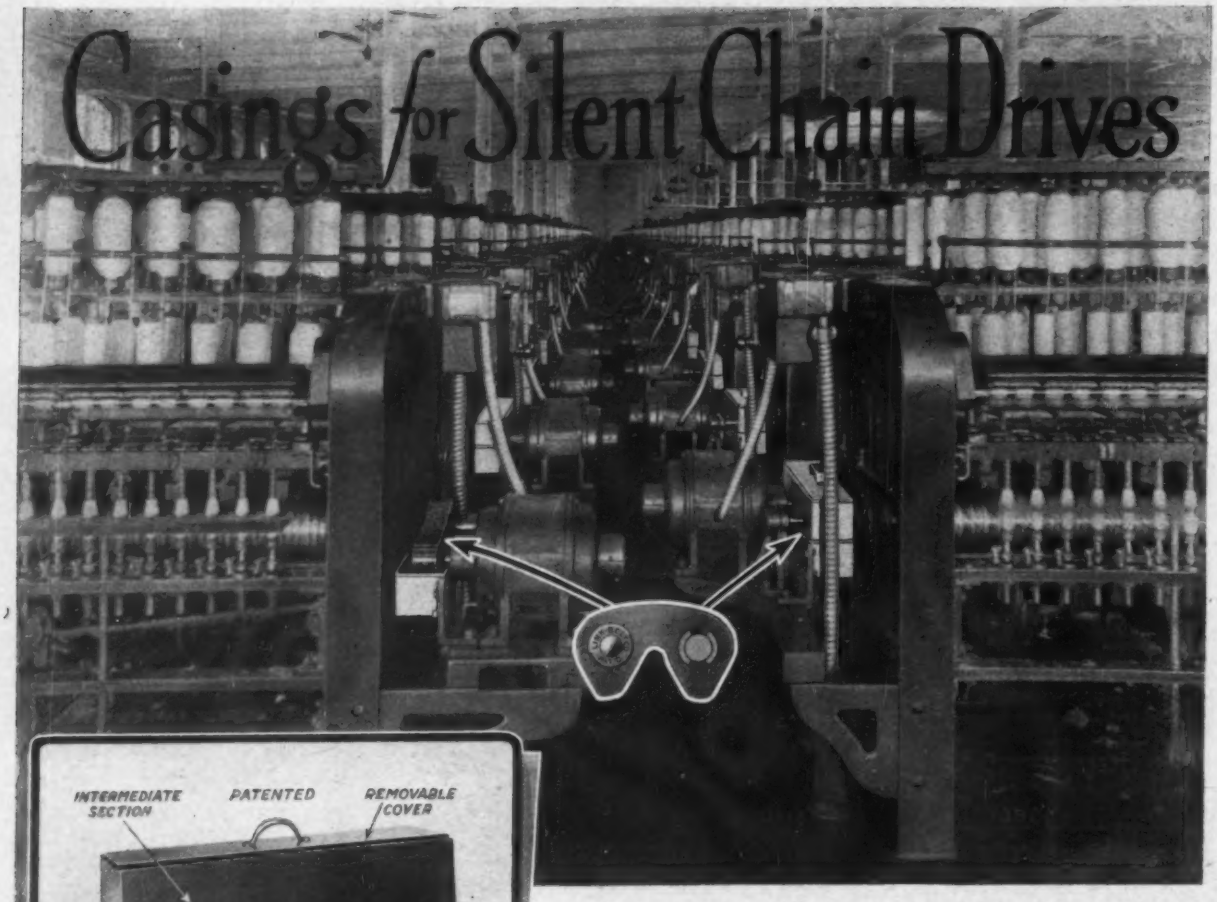
Main Office
40 South Clinton Street
Chicago, Illinois.

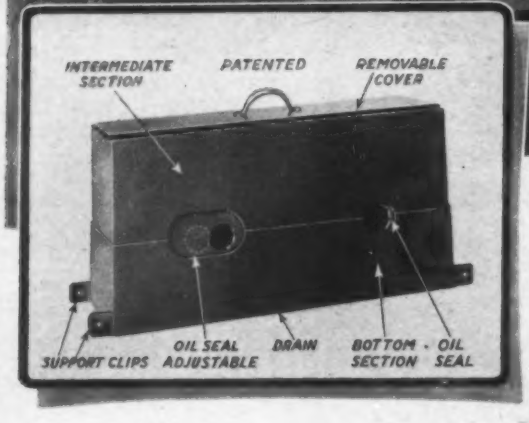
Factory
Menomonee Falls
Wisconsin





Casings for Silent Chain Drives





HERE is the famous Link-Belt Patented Casing specially designed for small-ratio, high speed Silent Chain Drives on textile machines.

It protects the highly-efficient Silent Chain Drive from flying lint—it provides effective lubrication at a minimum expense for attendance and oil—it covers all moving parts and makes for absolute safety to employees.

Link-Belt Silent Chain is known as the "Ideal Drive for Textile Machinery."

Let us tell you how both would fit into your mill. Catalog and further particulars on request.

875

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St. Louis	Central Nat'l Bank Bldg.
Buffalo	547 Ellicott Square
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LINK-BELT COMPANY

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Detroit	4210 Woodward Ave.
Minneapolis	418 S. Third St.
Kansas City, Mo.	306 Elmhurst Bldg.
Seattle	820 First Ave., S.
Portland, Ore.	First and Stark Sts.
San Francisco	168 Second St.

INDIANAPOLIS	TORONTO
Los Angeles	163 N. Los Angeles St.
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LINK-BELT
SILENT CHAIN
FOR POWER TRANSMISSION

IN the bearings sponsored by **SKF** its type of anti-friction bearings have been developed to their highest perfection. And **SKF** further provides an engineering service not only to assure to itself proper application and use of **SKF** marked products, but to help the buyer to fully capitalize the mechanical value built into each device. This service is freely offered and is being continually broadened and advanced by laboratory research that is international in scope. You are assured a similar service behind every product bearing the mark—

SKF

Among these products now offered are:

Single row deep groove ball bearings.
Double row self aligning ball bearings.
Steel balls.
Transmission Equipment.

SKF Industries, Inc.
165 Broadway, New York City
Supervising at the request of the stockholders
The Hess-Bright Manufacturing Co.
SKF Ball Bearing Co.
Atlas Ball Co.
Hubbard Machine Co.
SKF Research Laboratories

SKF *Research Laboratory established at Philadelphia to co-operate with the big Gothenburg Laboratories in the study of the American Manufacturers' friction problems.*

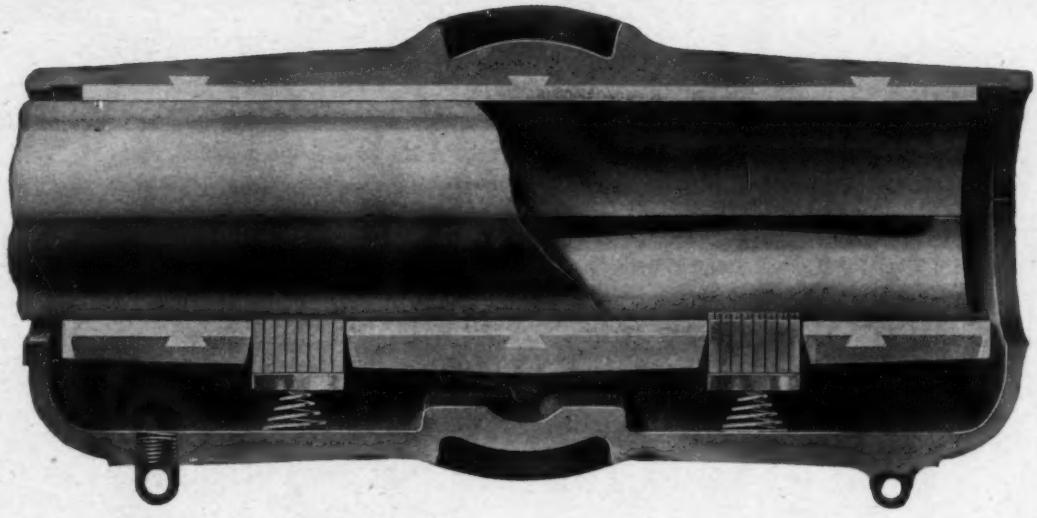
"Pioneer"
STEEL HANGERS
Have Taken
The Hard
Work Out
of Shaft
Hanging
There was a time when hanging shafting was a back-breaking job.
Now it is different—because "Pioneer" Steel Hangers weigh about one-third as much as the old-style cast iron.
The cost of the millwrighting is also very materially reduced and the "Pioneer" does not break—Never.
Its price is no higher.
Ask for a copy of our new booklet "Transmission Data". Contains some plain truths worth reading.
STANDARD PRESSED STEEL CO.
PHILADELPHIA, U. S. A.

Dodge Capillary Bearing

LUBRICATION BY CAPILLARY ATTRACTION

Requires Attention Once in 6 Months

POSITIVE LUBRICATION **MINIMUM FRICTION**



Dodge bearings are built for highest speed and hardest service, when shafts are properly aligned they constitute the most economical and lasting "Roadbed for Power" possible.

The capillary oiler is self acting, and takes care of itself. Once in six months drain off the oil from the reservoir and clean the bearing; then refill the reservoir with new oil, and the bearing will do its work, day after day without any further attention.

DODGE

Dodge Sales & Engineering Company, distributor of the products of the Dodge Manufacturing Company and the Dodge Steel Pulley Corporation. General Offices: Mishawaka, Ind. Works: Mishawaka, Ind., and Oneida, N. Y.
Canadian Plant: Dodge Mfg. Co. of Canada Ltd., Toronto and Montreal

Philadelphia Cincinnati New York Chicago St Louis Boston Atlanta Pittsburgh Minneapolis Dallas Providence Seattle Newark

"The Steady Pull Perfects the Product"

CLEAN · RUNS COOL · OIL BATHS NOT REQUIRED

MORSE SILENT CHAIN DRIVES

Without Slip, the Time Keepers of Production Bring out the Profits that are Concealed by the Slipping Belt.

The MORSE Rocker Joint bears the burden and patented Guide Links hold alignment. Flexible as a belt. Positive as gears. More efficient (98.6%) than either.

Write today for Technical Textile Booklet

MORSE CHAIN CO., LARGEST MANUFACTURERS OF SILENT CHAINS IN THE WORLD **ITHACA, N. Y.**

Morse Engineering Service *Assistance Without Obligation*

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CLEVELAND, OHIO.....Engineers Bldg.
DETROIT, MICH.....Woodward Ave.
CHARLOTTE, N. C.....Independence Bldg.
NEW YORK CITY.....50 Church St.
PITTSBURGH, PA.....Westinghouse Bldg.
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"Morse" is the Guarantee Always Behind the Efficiency, Durability and Service

Three TEXACO Specialties for the Textile Mill:

TEXACO RABTEX SPINDLE OIL

A light-bodied, straight mineral oil. It is the result of long experimentation and represents the finest oil for the lubrication of Rabbeth or Ring Spindles in textile mills.

The use of Texaco Rabtex Spindle Oil will reduce the power necessary to drive the spinning frame. It is endorsed by the mills using it as the most wonderful spindle oil ever produced.

TEXACO COMB BOX LUBRICANT

A product specially prepared to meet the difficult conditions encountered in the comb box.

It shows its suitability for the work in two ways:

FIRST: **One filling of Texaco Comb Box Lubricant lasts two or three times as long as the other kinds.**

SECOND: **In every case we have shown that with Texaco Comb Box Lubricant there is a considerable reduction in frictional temperature of the box. Sometimes this difference exceeds 15 degrees.**

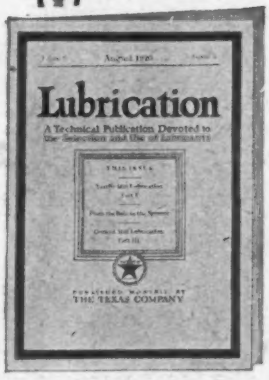
While the reduction of frictional heat through the use of Texaco Comb Box Lubricant is important, it is only a sign of the perfect lubrication secured. And this perfect lubrication means that the wear of the cams is reduced; the accuracy of the setting is maintained—and through this the strength and uniformity of the stock is insured.

TEXACO TOP ROLL LUBRICANT

A smooth uniform lubricant with the right body for the work. It is practically stainless in use—it does not creep onto the rolls and come in contact with the material.

It does not change its consistency under operating conditions so that a highly desirable uniformity of speed of the top roll is insured, aiding in the even drawing of the stock.

This lubricant is also used on roll necks, cams, differential motions, and draft gearing on slubbers, intermediates, and jack roving frames.



SEND FOR THE AUGUST AND SEPTEMBER NUMBERS

The leading articles of these two issues of our magazine "Lubrication" are on "Textile Mill Lubrication."
They take you, step by step through every process of manufacture, indicating the right lubricant for every machine, from bale breaker to printing machine.
No theory here — plain, everyday, operating experience, translated into concise recommendations.
One feature that you will like is that we have not overburdened this discussion with any propaganda for Texaco Lubricants. We tell you what KIND of oil to use and then allow you to decide for yourself how well we can supply each and all of your lubricating requirements with Texaco Lubricants.

Other Texaco Lubricants are:

TEXACO LOOM OIL
TEXACO TURBINE OILS
TEXACO GEAR LUBRICANTS
TEXACO MACHINE OILS
TEXACO ENGINE OILS
TEXACO GREASES

This Coupon Brings "Lubrication" to you FREE

THE TEXAS COMPANY

Dept. O, 17 Battery Place, New York City

NEW YORK HOUSTON CHICAGO

Offices in Principal Cities

Kindly send me, free, the issues of "Lubrication" containing the articles on Textile Mill Lubrication.

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11-20

Manufactured in large quantities, after patented methods. Especially adapted to industrial villages. Used by many of the largest corporations.

Thoroughly substantial. Costs less than half the ordinary house. Quickly erected. Absolutely guaranteed.

Saves architect's, contractor's, lumber dealer's and jobber's superfluous profits. Cost of manufacture and erection cut in half.

It Will Pay you to Investigate.

Address

QUICKBILT Bungalow Department F118

A. C. Tuxbury Lumber Co., Charleston, S. C.

ABERTHAW COMPANY BOSTON

Built by **ABERTHAW**

ADVANCED industrial thinking today recognizes that increased production is to be secured primarily through co-operation in utilizing modern methods and modern equipment in modern plants.

This implies far-reaching changes in factory planning and building.

Built by ABERTHAW insures the same scientific economy in the *construction* of a manufacturing plant that should subsequently control its *operation*.

ABERTHAW CONSTRUCTION COMPANY

BOSTON ATLANTA BUFFALO PHILADELPHIA

6-105

The Favorite Flooring for Modern Textile Mills,
(—and Some of the Good Reasons.)

TUPELO

TUPELO

A NATURAL WOOD

which grows in the South—*not* a "composition." Tupelo possesses a peculiarly valuable characteristic known as an "involved grain." Its fibers are so knitted or entwined as to make it extremely tough, very hard to split and non-slivering (quite a point). At the same time Tupelo is soft and easily worked, yet holds nails extremely well.

THEREFORE

THE NATURAL WOOD

for TEXTILE MILL and WAREHOUSE FLOORS—not only because of its structure, but by reason of its relative economy. Tupelo gets smoother, solider and denser under heavy trucking and long-continued wear, and it is *quickly available* in any quantity. Tupelo Floors have advantages of special interest to any manufacturer requiring a hard-wearing, easy-working wood.

Write us for full information

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION

805 Perdido Building, NEW ORLEANS, LA., or 805 Heard National Bank Building, JACKSONVILLE, FLA.

Beauty and Utility

THE *practical* advantages of steel sash—its greater strength, longer life, and easier operation—are familiar facts.

But Lupton Pivoted Factory Sash lends itself equally to *beauty of design.*

Notice in the view below of the Crown Overall Manufacturing Co's. building, how the broad window openings—scarcely broken by the thin lines of the sash and mullions—emphasize the vivid white pilasters. Notice the balanced effect of the upper and lower ventilators in each window opening, and the harmony of proportion between the sash in the walls and in the corner towers.

Yet these upper and lower ventilators are not meant merely for looks: their real purpose is to give a balanced in-and-out air movement when there is no wind.

In a wide building like this, where many workers are likely to be crowded together, upper and lower ventilating openings are as essential to health as high ceilings and large glass areas are to easy vision.

We have published a 48-page booklet entitled "Air, Light and Efficiency," showing numerous sash applications to general manufacturing buildings. Some of them are very unusual. A copy will be sent free on your request.

DAVID LUPTON'S SONS COMPANY

Amber St. and Allegheny Ave. Philadelphia

Specialists in daylighting and ventilating equipment for maximum production

Chicago New York Detroit Cleveland Buffalo Pittsburgh Atlanta Boston

Canadian Manufacturers: The A. B. Ormsby Co., Ltd., Toronto

"Today — the Sash makes the Factory"

Crown Overall Mfg. Co., Cincinnati, O., Zettel & Rapp, Architects. Size of building about 96 x 190 feet. Lupton Pivoted Factory Sash used throughout. Upper ventilators operated in groups by hand chains; lower ones by separate peg stays.

Lupton

INVESTMENT VALUE

Lupton Pivoted Factory Sash
Lupton Counterbalanced Sash
Lupton Steel Partitions and Doors
Lupton Rolled Steel Skylight
Pond Continuous Sash for Pond Truss roof, monitors, sawtooths and side walls
Pond Operating Device for long lines of sash

THE FUNCTIONS OF THE ENGINEER

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The value of a textile mill lies not in the pile of building material and machinery which make up the complete structure, but in the productive and earning possibilities—not for one year, nor five years nor ten years, but for the life of the plant.

The usable worth of the machinery will not extend over as long a period as that of the building, but the same equipment will depreciate only half as fast in one building as in another, or under improved conditions in the same structure.

The same machinery re-arranged in the same building may frequently be made to produce more goods of uniform and better grade at less cost.

Results like these are being frequently secured through examinations by Engineers familiar with modern textile operations.

This subject is discussed more fully in two little books we have prepared—"Picks to the Minute" and "Examinations and Industrial Surveys." Either or both copies will be mailed to you on request.

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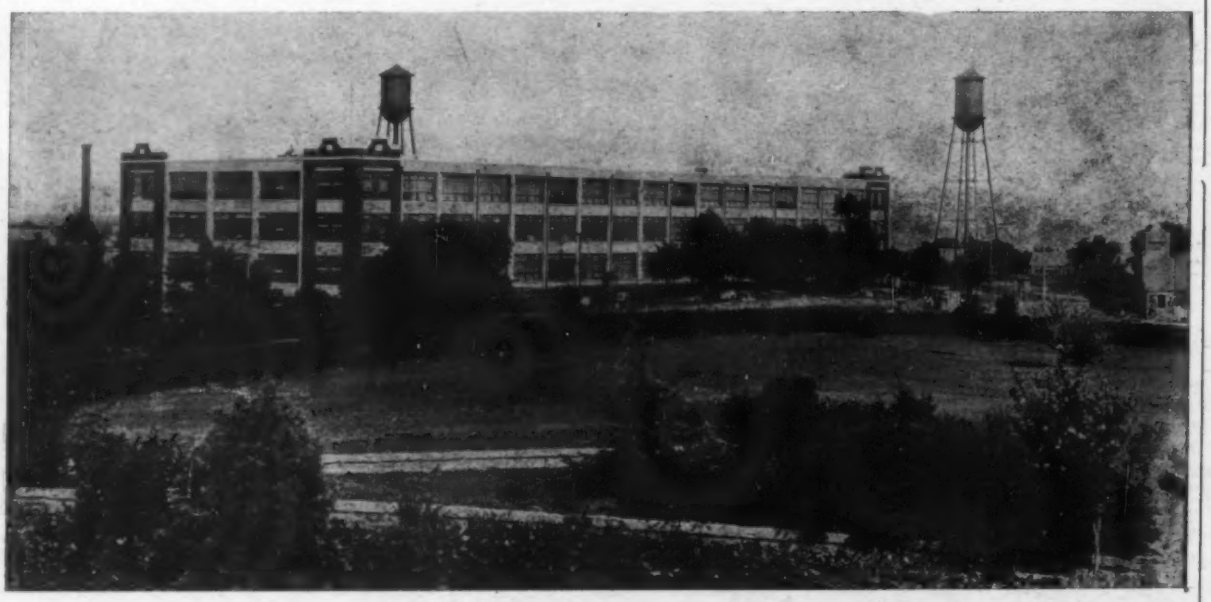

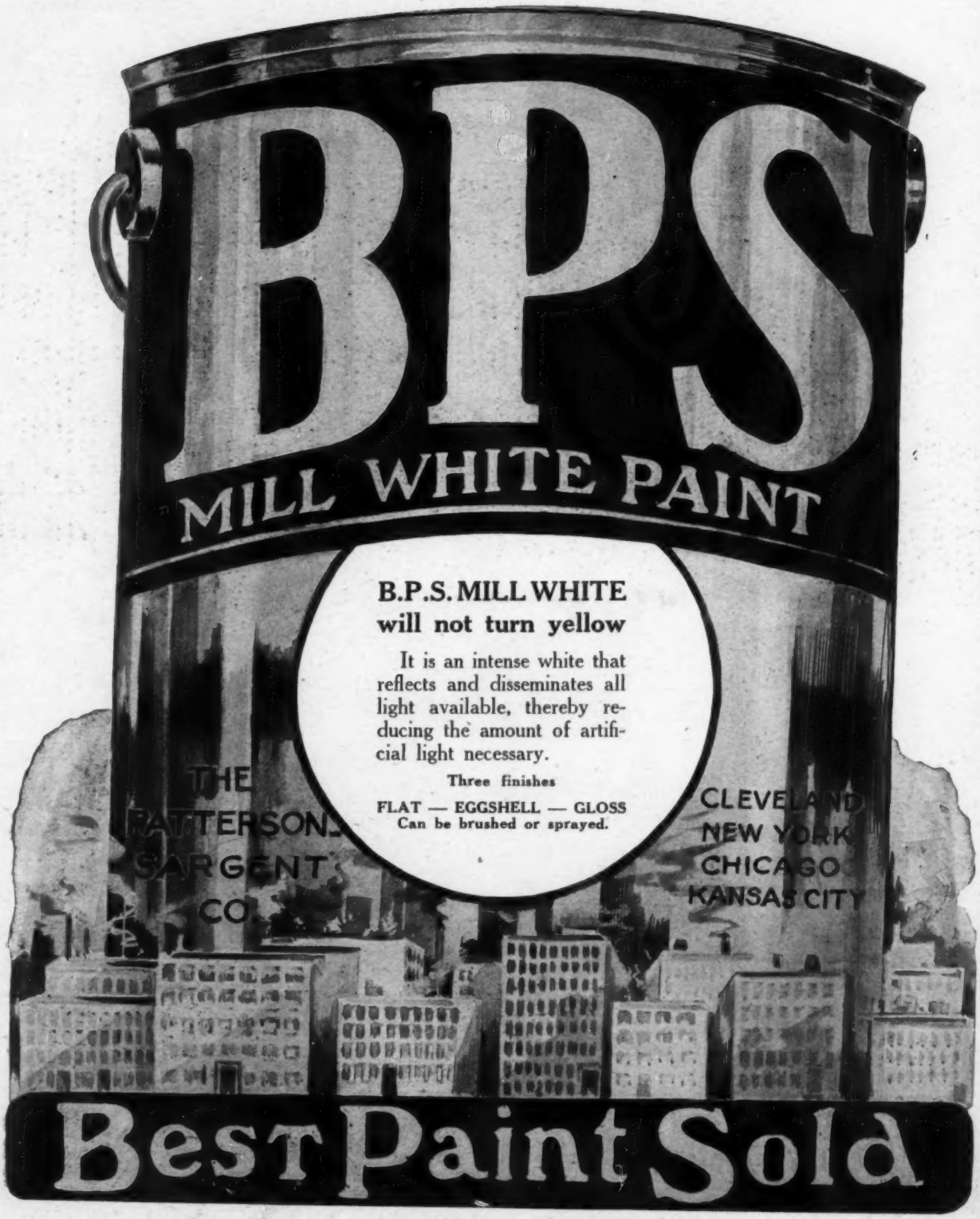
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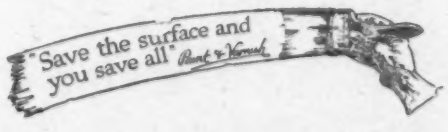

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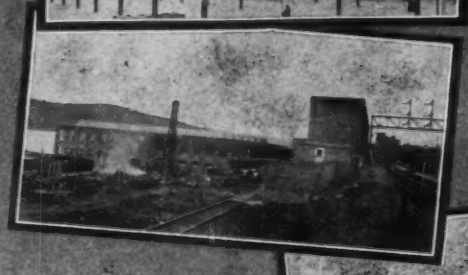

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In 1911, Ferguson built a new paint shop and miscellaneous buildings. In 1912, an addition to the turbine room. In 1913, a five-story machine shop. In 1914, a two-story pickling and tinning building. In 1916, 1917 and 1918, additions to various buildings and another machine shop. In 1919, contracts were placed for the construction of a concrete bulkhead and a one-story brick structure.

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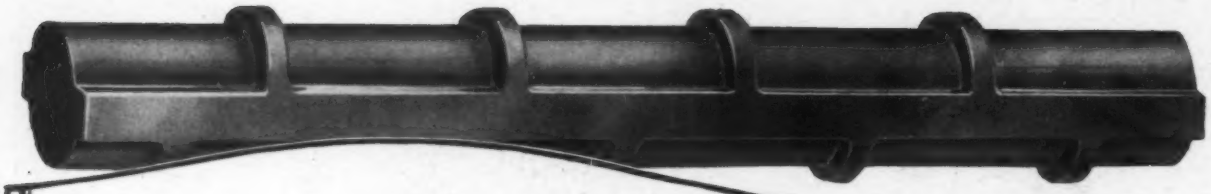

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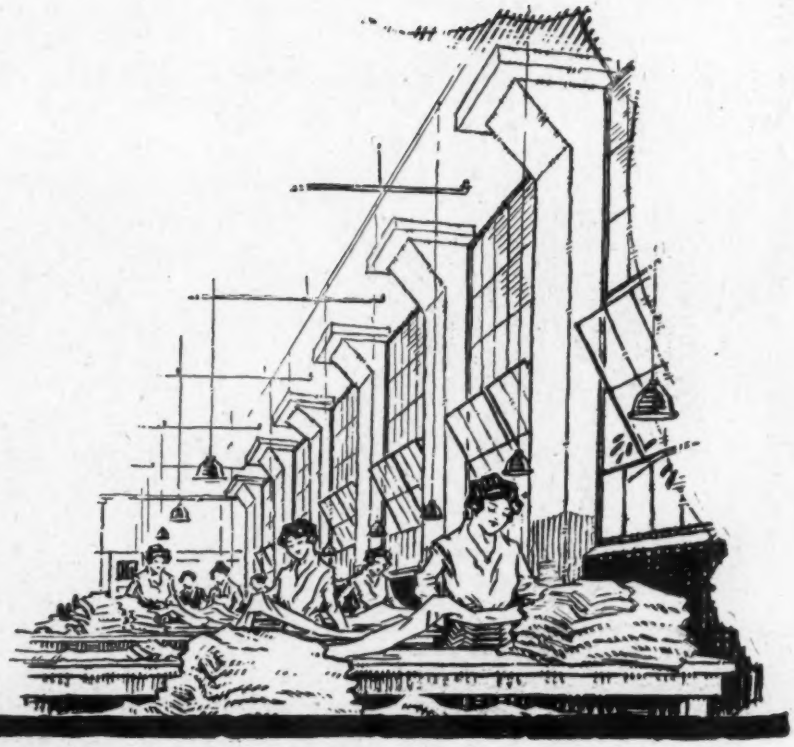

THE final step—inspection. Keen eyes search for imperfections. Keen eyes need the assistance of good light. Nature is generous. In a modern mill large windows admit the sun's rays and allow them to flood the place. In less modernly constructed plants small windows check the efficiency of the sun. In either type the sun also needs assistance.

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This picture illustrates the Benjamin R-L-M Dome Shade Holder Reflector.
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"Now we're going to have Good Light in this shop and right off the old sockets too"

"—and this is what is going to do the job. You see, here's the idea—these Benjamin Shade Holder Reflectors are shade holders and reflectors united in one piece. We're just going to put in some new lamps of the right size in the old sockets—put these Benjamin Shade Holder Reflectors in place and then you're going to have just the right amount of light you need on your work.

"You remember the fellow the old man had in here a few days ago with that little box he called a foot candle meter? Well, he said you could do better work and not get so tired if the light intensity on your work was just right. Then he figured to use the old wiring and sockets and picked on this Benjamin Shade Holder Reflector to do the rest.

"So here I am putting in the new lamps and attaching the reflectors. The old man figures you're going to be happier when you can see what you're doing and I reckon he's right. Then pretty quick you can put out more pieces every day and get a bit more in the old envelope to take home to the wife Saturdays."

There is a Benjamin Reflector with which to secure Correct Industrial Illumination under all conditions. Benjamin Illumination Engineers will gladly co-operate with Architects, Engineers or Contractors regarding correct industrial illumination in new or old plants. Ask for Bulletin 17.

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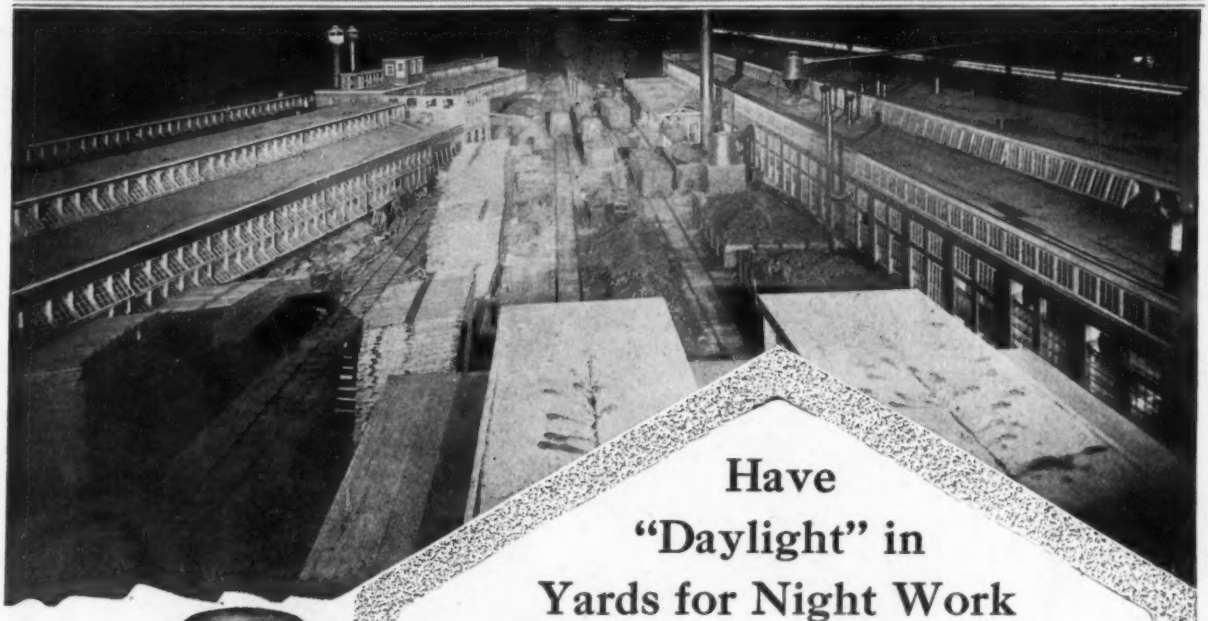

Have "Daylight" in Yards for Night Work

THIS illustration shows a factory yard illuminated almost as bright as day with Imperial Floodlight Projectors so that work can be done at night.

These floodlights are used by contractors, mill and factory owners, railroads, ship-builders, etc. for night construction work and protection.

They can be connected to any incandescent lighting circuit, are easily installed, illuminate a wide area, and are easily maintained.

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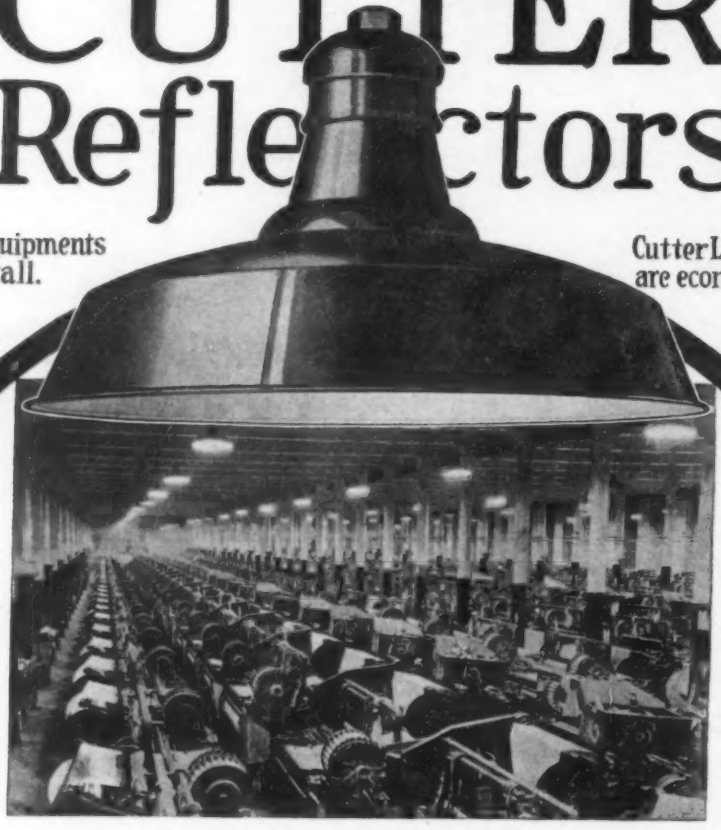
Cutter Lighting Equipments are economical to Maintain



"Light Without Glare"

Cutter Reflectors with Westinghouse Mazda C Lamps offer a practical solution for eliminating glare by shielding the lamp filament from the direct line of vision.

Cutter Bowl-Type Reflectors should be used in buildings where high mountings are possible.

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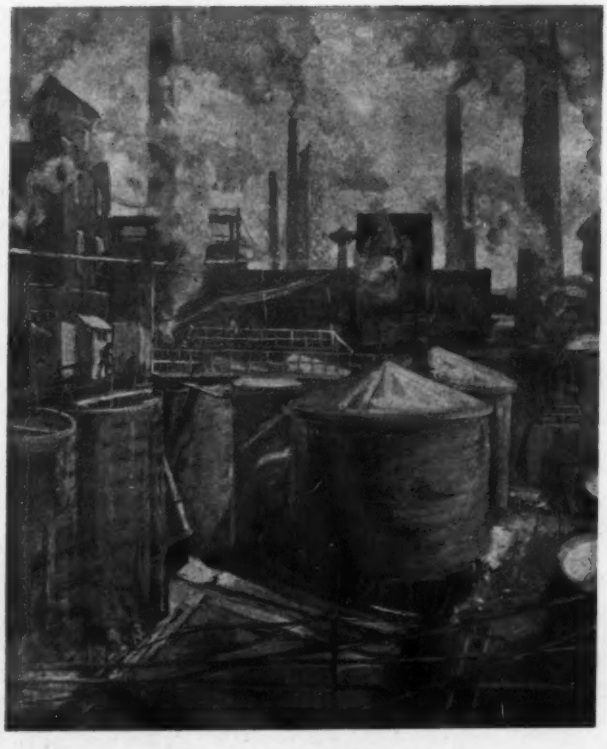

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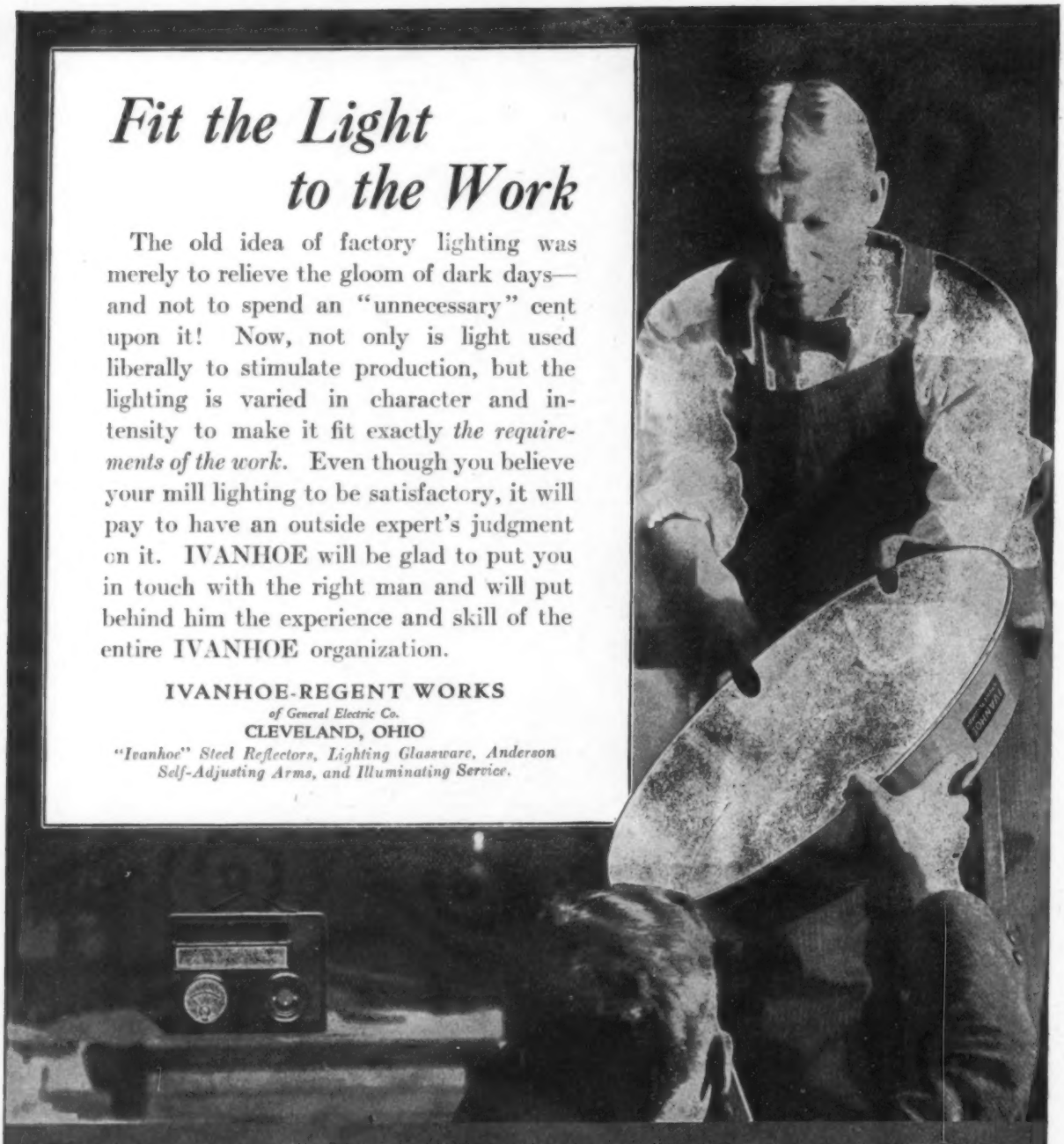

"Service to Lamps"

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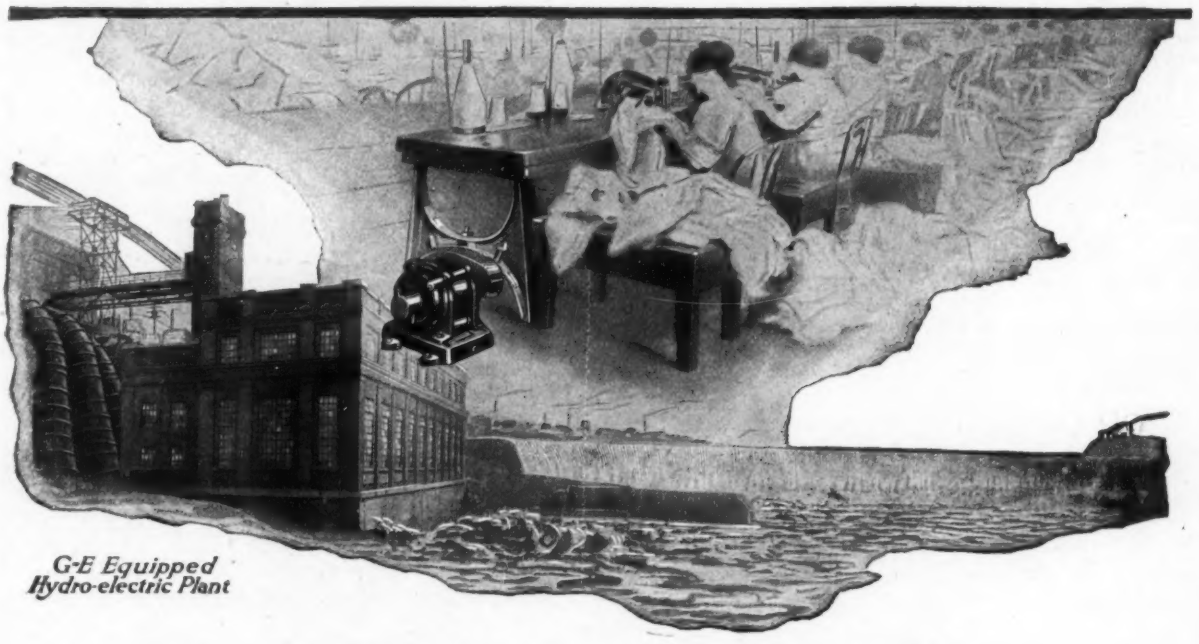
SHADES-REFLECTORS

In many cities production can be increased, its quality improved, and new industries added by efficiently making and using the available power



G-E Equipped Hydro-electric Plant

How electricity increased and improved a textile city's production

EACH mill in a certain textile city was driven by its old water-wheel—production was low, so was quality.

In summer, low water and leaky canal beds slowed up the wheels—in winter, anchor ice did the same.

Finally, G-E textile mill specialists were called in to suggest a better way of using the water power.

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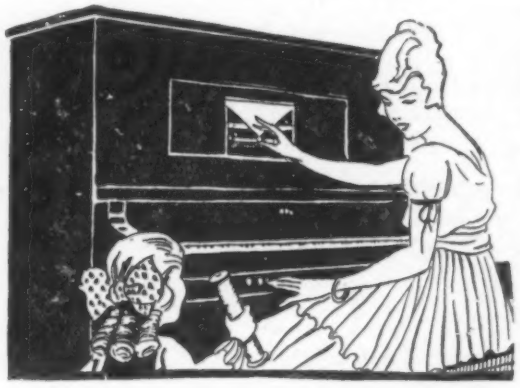

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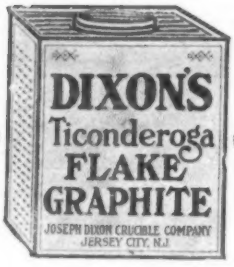

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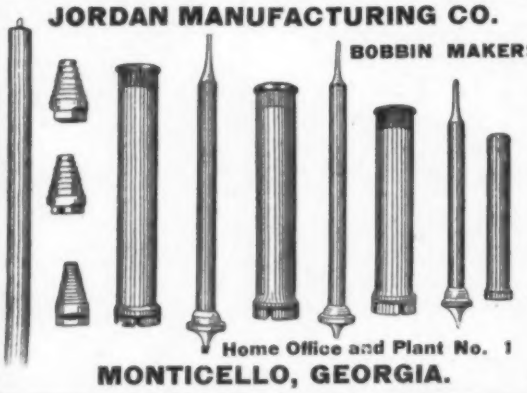

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ELMER B. TOLSTED

The Why of Labor Turnover

Elmer B. Tolsted is a prominent figure among the industrial engineers of this country, and is especially well known in the accident prevention and industrial relations lines. He is a mechanical engineer, a graduate of Lewis Institute in Chicago, in 1906. His experience in the industrial field has been unusually well rounded. He has had experience in mechanical design and construction, in actual manufacturing, and for several years he was connected with the Federal Government, in engineering research. He thus gained a knowledge of theory and principle, as well as their practical application.

For several years Mr. Tolsted was connected with the United States Bureau of Mines, where he was engaged in the experimental and theoretical study of mine safety and also in the actual handling of mine disasters. In the course of his rescue work, he was brought face to face with sights and circumstances which impressed him tremendously with the importance of the human side of industry. Since then his time has been devoted entirely to this big problem—the protection and development of the workers.

In 1911 Mr. Tolsted became associated with the Independence Bureau of Philadelphia, an organization of consulting engineers. There he carried out his idea by organizing its accident prevention work. He had an important hand in the development of the safety movement, and is a member of the executive committee of the National Safety Council.

Of late years, Mr. Tolsted has broadened his activities to include the larger field of Industrial Relations, the aim of which is the creation of a satisfied, efficient working force and the reduction of labor turnover. In this field, Mr. Tolsted has made special studies of many important branches, some of which are the organization of an employment office, statistical studies of labor turnover, wages in relation to cost of living, housing, working conditions, mutual benefit associations, profit-sharing schemes, and pensions.

The article in this number on "Pensions for Industrial Employees" is a product of his wide experience and broad understanding of the conditions to be met in the industrial field.

This Number Begins A New Volume

The October number of COTTON closed Volume 84 and a reference to its page numbers shows that nearly one thousand pages of reading matter were included in the twelve numbers. We are presenting a list of a few of the important articles printed in the last twelve numbers.

Practical Cost Accounting.
Part-Time Schools at Cotton Mills.
America's Influence in China's Cotton Industry.
Opportunities in Fine Goods Manufacture.
A Plan to Promote Industrial Efficiency.
Manipulation of Short-Fibered Cotton.
The Finishing of Pocketings.
Window Shades to Aid Mill Lighting.
Uses of Knitted Web for Outer Garments.
Safety Work in a Cotton Mill.
The Group Method of Cost Finding.
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Aniline and Its Uses.
Proper Lighting of Schools.
Labeling of Knit Goods.
Ball Bearing Spindles.
Industrial Nurses.
Yarn Costs that Guide Selling Policies.
Village Planning—A Study in Housing.
Solving the Employment Problem.
Industrial Democracy—Its Results.
Yarn Stop Motions.
Increasing Production—Reducing Cost.
Domestic Science and Saleratus.
Ribbed Hosiery.
The Doffing of Twisters.
The Industrial Problem.
Diphenyl Black Printing.
Hosiery Analysis.
Cotton Weaving Problems.
The Index Number Wage System.
A Method for Stopping Drop Ply.
Reducing the Unit Cost.
Reducing Costs in the Knitting Mill.
Saving Dollars in White Waste.
Making 28s Single Carded Hosiery Yarns.
Democracy as Applied to Industry.
Bleaching Towels.
Multiple Feed Stop Motions.
Crop Regulation and Cotton Market Control.

How many of these articles did you read? They represent only a small part of the total contents which included a large number of technical articles, market reviews, convention reports and editorial comments on live topics. Volume 85, which is just starting, will be equally as good and in some respects better as the editors report that they have some excellent articles lined up for the coming year. Just at this time, when industrial conditions are particularly difficult, it would be especially opportune for you to get the habit. Read COTTON.

AMONG COTTON'S READERS

Walter B. Knight

Agent, Quidnick-Windham Manufacturing Co.
Willimantic, Conn., and Quidnick, R. I.

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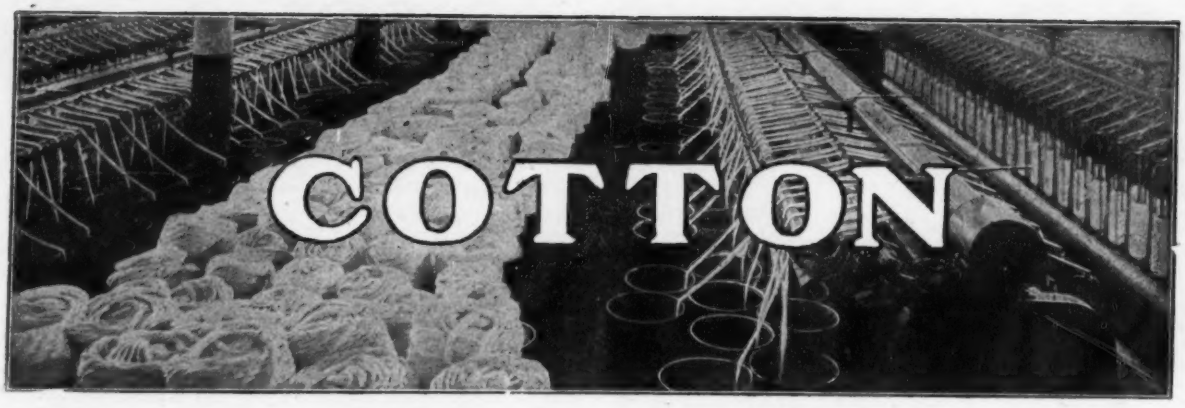


November, Nineteen-Twenty

Greater Need for Protecting Cotton.

A series of experiments to determine the extent to which, under various conditions, baled cotton is destroyed by weather was recently conducted by the Bureau of Markets, United States Department of Agriculture, at Jefferson, Ga. The results are striking. In one instance, a bale of cotton placed out in the open, flat on the ground with no covering, was damaged to the extent of 370 pounds at the end of eight months. Another bale placed on edge with no further attention lost 167 pounds. A bale on edge and turned over once a week lost 110 pounds. A bale placed on end and not turned lost 78 pounds. A bale placed on timbers off the ground and turned once a week lost 49 pounds, and a bale placed on timbers and covered with tarpaulin lost but 14 pounds. A warehoused bale of cotton during the same period lost only one pound. Other tests have been conducted from time to time that corroborate these results and prove that the ideal conditions under which cotton may be held by growers before marketing are afforded by properly constructed, efficiently operated, bonded warehouses.

With an enormous over-supply of low-grade cotton in the South at the present time, the necessity for protecting the crop from weather, fire, and other loss is greater than ever before. The potential weather damage and other risks to which exposed cotton is subject increase in direct proportion as the time that cotton remains in the hands of the growers lengthens, and if the cotton growers are not to lose millions of dollars every safeguard against hazard of loss must be employed. In the matter of weather damage alone it has been estimated that in normal times $70,000,000 worth of baled cotton is lost annually as a result of permitting cotton to remain exposed to the elements months at a time without covering or attention of any kind.

When it is considered that in many instances the total cost of warehousing cotton, including insurance, is no greater than the fire insurance rate alone on exposed cotton, it would appear to be the utmost folly for a grower not to spend his money to greater advantage. The insurance rate on exposed cotton is about $4. a hundred per annum. Every $100 worth of cotton stored in a properly constructed and protected warehouse can be insured for 25 cents per annum. The differential of $3.75 would in many cases pay all other warehouse charges.

Of fifty bales of cotton that a cotton grower of Maysville, Ga., sold to a local buyer a short time ago, 65 pounds in each bale was found to have been destroyed because of exposure to the weather. At 30 cents a pound the grower lost nearly $1,000. If this grower insured his exposed cotton it cost him at the rate of $300 a year fire insurance alone. He neither had protection from weather damage or theft nor was he in a favorable position to negotiate a loan upon his product. To have secured these advantages would have cost him at the maximum but a little more than the cost of the fire insurance alone. By diverting his investment into a channel that would have given him the fullest value for his money, he would have saved the $1,000 that he lost through neglecting his product.

The present movement of southern cotton manufacturers to aid in warehousing the product is along the right line, and the comparatively low cost of fabricated steel buildings for warehouse purposes should lead to much better warehousing conditions in the not far distant future. The value of the staple is now so great that the annual losses among groups of planters will easily pay the interest on the necessary investment and still leave a profit margin over leaving the cotton unprotected against the weather.

Mill Building in China.

Several causes have recently directed the attention of Japanese spinners to the feasibility of establishing spinning mills in China, namely, the increased duties placed by China on textiles, the restrictions placed by the Japanese Government on the export of yarns, the abundance of cheap labor, and the fact that in China raw materials and markets are close at hand.

The Japan Cotton Spinning Company sometime ago launched a project for the establishment of a spinning mill at Tsingtao. The company acquired a tract of about 20 acres and filed application for permission to erect its buildings. This permission was recently given, and the work is already under way. The company proposes to operate approximately 35,000 spindles. In addition to mills now under way at Shanghai, the company plans to erect another mill at Tientsin to operate from 20,000 to 30,000 spindles.

Three more promotions of a similar nature to be located also at Tsingtao are now reported. Messrs. Toyoda, Yamamoto and the Nisshin Cotton Spinning Company have all filed petitions for permission to erect factories

of 30,000 spindles each. Thus the total projects now under way amount to 125,000 spindles. The Naigai Company, a Japanese concern, is already operating a mill of 30,000 spindles at Tsingtao. The machinery for all these ventures is to come from America, according to reports.

At Tientsin a number of native and foreign enterprises are under way. The Fuji Cotton Mill of Japan is constructing a factory to be equipped with 30,000 spindles. The Heng Yuen Cotton Weaving Company is erecting a mill to be equipped with 200 looms and 10,000 spindles. The company will manufacture sheetings, drills and heavy canvas. The Yuan Textile Company is making an extension to its present plant to provide for 20,000 spindles, which will bring its total up to 45,000. It is reported that Mr. Chow Hsuehhsi, director of the cotton bureau, plans to erect a large cotton mill at Tientsin, but how the capital is to be raised is not known. The Wahsing Cotton Spinning Mill, which began operation of 25,000 spindles at the end of 1918, together with several other mills, plans extensions which will total 54,000 spindles. Most of these mills are driven by electric power.

According to Japanese press reports, there are two cotton mills building at Wuchang and a third is contemplated. A mill at Wuchang already in operation is under the management of the Chuhsing Kungsu of Hankow, and a school is run in connection with the mill. Although on a rather small scale, it is said to be very efficiently conducted, a fact which has led to similar projects.

Overseas Chinese capitalists are reported to have formed a company at Canton to be known as the Tai Chung Hua Cotton Mill, capitalized at $5,000,000 of which $2,000,000 has already been subscribed. The capital is to be raised jointly by the promoters and a group of 72 merchant guilds of Canton. The proposed mill is to be modeled after the large Chinese-owned concern in Haiphong.

A New Asset for Industry.

Strikes form one of the great tribulations of a manufacturing plant. They might be aptly termed an ineffaceable trial, for they will doubtless be with us, to a degree, until the end of time. A strike, when affecting a plant, affects it hard and affects it disastrously. First it hurts the employer, stopping production and causing a loss in profits. Next—though sometimes they seem not to realize it—a strike is costly to the employees, the strikers themselves. It shuts off their incomes and often causes suffering. Then the public is affected, through a shut-off of the product and in other inter-related ways.

Accurate records of the past twenty-five years show that each succeeding five-year cycle has found the industries of the country confronted with an increasing percentage of strikes over the preceding period and these, with all their direct and indirect consequences, have, it is estimated, resolved themselves into a national economic waste of five billions of dollars annually.

That's a lot of money and any employer of labor should be interested in a plan that would minimize this strike waste, protect against such a loss to his plant and the plant of his neighbor. Reason shows, however, that there must needs be a cohesive organization for this purpose, just as there is a combine behind the majority of strikes. That in addition to moral support such an organization must have financial assistance.

The primal incentive of strikes is well known—loss to the employer. Then, could not the number of strikes be lessened by a reduction of this loss? If so, then several ciphers could be knocked off the total of the annual strike waste. Strikes could be prevented if the would-be strikers saw that their employer would not be financially or otherwise affected by such action—otherwise, what would be the advantage of striking? But it stands to reason that no individual organization is strong enough to stand much of a strike without losing money. The logical solution, then, is an equitable distribution of the loss.

Such a plan is the object of the Employers Mutual Insurance and Service Company—to provide a medium for equitable distribution of loss at minimum cost, through scientifically conducted insurance on the Mutual plan. It is an association of representative, well-meaning employers, organized nationally upon a financial basis under a practical plan which includes not only protection against loss but also prevention of the causes of loss. It indemnifies its members against actual loss of fixed charges and net profits caused by a partial or total stoppage of production through strike or walk-out of all or part of the employees. Its rates were developed from ascertained facts upon a sound actuarial basis; they are based upon accurate strike data covering a period of 38 years. They accurately reflect the hazard, not only for each industry but for the same industry in different localities. This form of protection, like ordinary use and occupancy insurance, covers actual loss of fixed charge and net profits due to diminished production—regardless of whether or not property or equipment is injured.

After policies are in force each plant is surveyed and the rate adjusted according to conditions disclosed. Establishments which have already adopted advanced methods making for contentment of employees (and, therefore, less exposed to the risk of strike) receiving a proportionate return of premium up to 20 per cent.

In addition to insurance protection, members who need and desire it can avail themselves of the company's service departments, conducted by practical men and covering prevention and mediation of disputes, wage bases and living costs, industrial relations and other conditions affecting the best interest of employer and employees.

Promoting Textile Education.

The work of promoting textile education, which has been fostered by the American Cotton Manufacturers' Association and received a favorable report from their Committee on Education at the Richmond meeting, receives an additional impetus from the recently issued report of the Textile Department of the North Carolina State College of Engineering. This report points out that the Aberfoyle Manufacturing Company has, for the second time, given ten scholarships to young men taking the textile course. Other members of the association who have presented scholarships for textile courses are the Chadwick-Hoskins Company, Charlotte, N. C.; Tolar, Hart & Holt, Fayetteville, N. C.; Kinston Cotton Mills, Kinston, N. C.; R. M. Miller, Jr., Charlotte, N. C., and W. H. Harriss, Broker, New York City.

It is not enough to hold the key to the situation—you must be able to turn it to open the door.

Pensions for Industrial Employees

BY ELMER B. TOLSTED.

SUPERVISING ENGINEER, INDEPENDENCE BUREAU, PHILADELPHIA.

Why should we pension our aged employees? More than one hard-headed board of directors these days is puzzling over that query. Not content with the easy reply that "everybody's doin' it" these thoughtful business men are earnestly asking *why?* and, like Togo, they "ask to know."

Pensions cost money, far more than is generally supposed. They constitute a moral if not legal obligation, a liability which cannot be lightly regarded without seriously injuring many present or prospective pensioners; and as a result of such injury the reputation of the employer also suffers. Many plans have failed, have had to be fundamentally revised, or have become profit-consuming burdens on the companies inaugurating them because costs have been superficially estimated. Authorities who have recently investigated pensions assert that only very few of the two hundred or more industrial pension plans in the United States today affecting millions of wage earners are so financed that they are likely to remain solvent without refinancing or modification. With that staggering fact staring them in the face it is no wonder that sensible business executives refuse to be stampeded into adoption of pension plans. They prefer to claim residence in Missouri.

A million and a quarter persons over sixty-five years of age in the United States are dependent upon public or private charity. Among wage earners, it is estimated that one person in eighteen reaches the age of sixty-five in penury. Why? Because:

1.—Many persons become seriously deficient in earning capacity after sixty-five years of age;
2.—Many have never earned enough to permit adequate savings against the hazard of superannuation;
3.—Many whose incomes should have provided an independent old age have been improvident or have suffered misfortune and thus have been left penniless.

Well, granting these facts, says the cautious chairman of the board, what business is it of ours? We're not a charity organization nor any socialistic government. Let us hope he's right; there are plenty of good *business* reasons for pensions without looking around for excuses. Pensions *pay!* But—don't expect miracles.

A pension plan is no bitter pill which can be swallowed in a glass of water and expected to cure labor turnover, ward off labor troubles, greatly stimulate loyalty, or take the place of good wages. But pensions will increase efficiency by making easier the removal of workmen partially incapacitated by advancing years; and a simple, definite pension plan will stamp a concern as progressive.

Overseers are human. In their relations with their workers they resemble the mill owners of the good old days. With few exceptions the overseer takes a keen personal interest in the well-being of each of his hands. He cannot bring himself to strike the blow that will leave his older workers helpless. Consequently he keeps them on the payroll and assigns them the simpler, less arduous tasks. Productive efficiency suffers from this practice, but to replace these old men would do greater injury, damaging morale by incurring resentment among the remaining employees at the summary dismissal of old and faithful workers. In plants where an arbitrary age limit is enforced, employees lie about their ages in order to extend their tenure of employment. Deceit is added to inefficiency and to the weakened morale occasioned whenever a dismissal does occur.

Kindness of overseers means inefficiency; harshness means deceit, disloyalty, and again—inefficiency. Pensions solve this dilemma. Pensions permit dismissal of superannuated employees under conditions which provide:

1.—A reward for long, faithful service;
2.—An independent, self-respecting old age.

From the viewpoint of the younger, remaining employees, the removal of an aged associate under such circumstances gives cause only for kindly feeling toward the overseer and the company.

The companies now having definite pension plans are the cream of American industry. They are mostly large, substantial concerns which have demonstrated repeatedly the wisdom of their policies. The smaller, newer corporation does well to emulate much that these leaders have done. By doing so it not only plays safe by adopting measures which have proved their worth, but it acquires the vicarious advantage of borrowed prestige. It classes itself with the best; and it is the common observation that the world is very much inclined to accept each of us at his own valuation.

Pensions pay—*provided* the same sound business judgment is exercised in devising and administering the pension plan which is used in every other department of a business. For many years employers have often granted allowances to incapacitated employees, but until recently they have done it in a haphazard fashion, treating each case as it arose. The allowance generally depended upon the need of the employees, the prosperity of the business at that particular time, and sometimes on the whim of the employers. The employees could not look forward with any certainty to an allowance in their old age. They were consequently largely dependent upon the "charity" of employers.

Particularly in the last ten or fifteen years, however, the tendency has been toward definite pension plans, carefully worked out and insuring uniform treatment to all. Such a plan eliminates to a large extent the alleged taint of "paternalism" which clings to a discretionary pension given in the nature of charity. A pension should be viewed by the company and by the employees as having been earned by long service. In many cases "jobs" have their fixed compensation and "service" is not properly rewarded. "Service," however, has its value and should be compensated after it has been received. Viewed in this light, pensions are not the gifts of a benevolent autocrat but the well earned reward for faithful service.

An indefinite, discretionary pension plan, moreover, is often unwise because it tends to discourage saving. The amount of a pension in this case is frequently based on

the need of the employee, and the less he has saved up when he reaches old age, the more he will receive from the company. Even under a definite pension system a large allowance tends to discourage thrift. Wisdom dictates an allowance of not more than half the wage.

Under a definite plan the employer can calculate in advance what the cost will be and plan to meet it in the best way. On the other hand, the employee can calculate in advance what benefits he may derive and consequently, insofar as a pension plan is likely in any way to reduce labor turnover or increase loyalty, the likelihood is much greater if the plan is definite and is well understood by all employees. When a man can take pencil and paper and figure his probable pension and plan for the future, he is much more apt to think twice before leaving the company which is offering him this help in his old age.

An illustration of this point appeared not long ago. An important employee of one of the large packing companies in Chicago was asked to take charge of a small concern at a considerable advance over the salary he was then receiving. The offer looked very attractive, except for the fact that in making the change he would be giving up his right to the pension offered by the larger company. Being mathematically inclined, he figured out the probable value to him of the pension and replied that he would change his employment for a very slight advance over his former salary, but that he must have an additional sum of $13,000, which represented his estimate of the value of the pension which he would thereby lose. Needless to say the packing company kept the valuable employee.

While this incident illustrates how pensions are often regarded among the more intelligent employees it must not be assumed that they have so strong an appeal for the average factory hand. The value of any type of pension plan in holding any but the older employees is doubtful, as the average young man gives little forethought to his old age.

There are endless variations in the details of pension plans, and seemingly minor variations frequently create important differences in cost. The pension age is usually set at sixty, sixty-five, or seventy for men, with a five year differential for women. The length of service required ranges from ten or fifteen years in very liberal plans to twenty-five and thirty in the majority of plans. Many make provision in case of total incapacity before the age or service qualifications are met. In some plans retirement at the specified age is compulsory; in others it is optional on the part of the employee or company; in others it is entirely dependent upon incapacity.

It is customary to base the amount of pension upon the length of service and upon the earnings of the employee. The most common allowance is from one to two per cent of the average annual compensation during the last ten years of service, multiplied by the number of years of service. Taking the one per cent figure, if a man has earned an average of $1200 a year for the last ten years of his service, and he has been with the company thirty years, his pension will be 30 per cent of $1200, or $360 a year. Often the pension is based on the wage for the last year instead of the last ten years; but under this plan at times of rapid wage changes pension changes are also rapid and give equally capable employees entirely different pension amounts. Of late, practice seems to favor using the average wage for the ten years of maximum pay so that employees will not object to less remunerative jobs after their earning capacity decreases and before they are eligible for a pension.

Most pension plans are supported entirely by the company, but there are a few which are supported partly by the company and partly by the employees. The chief value of the contributory plan is to encourage thrift by combining the savings and the pension features. Thrift is more effectively stimulated, however, by a savings plan operated separately. It is of questionable wisdom to insist that all employees subscribe to a contributory pension plan, and when only a portion of a firm's employees is included it loses much of its value. The employees who will not join a voluntary plan, are usually the very ones who are most in need of pensions when they grow old.

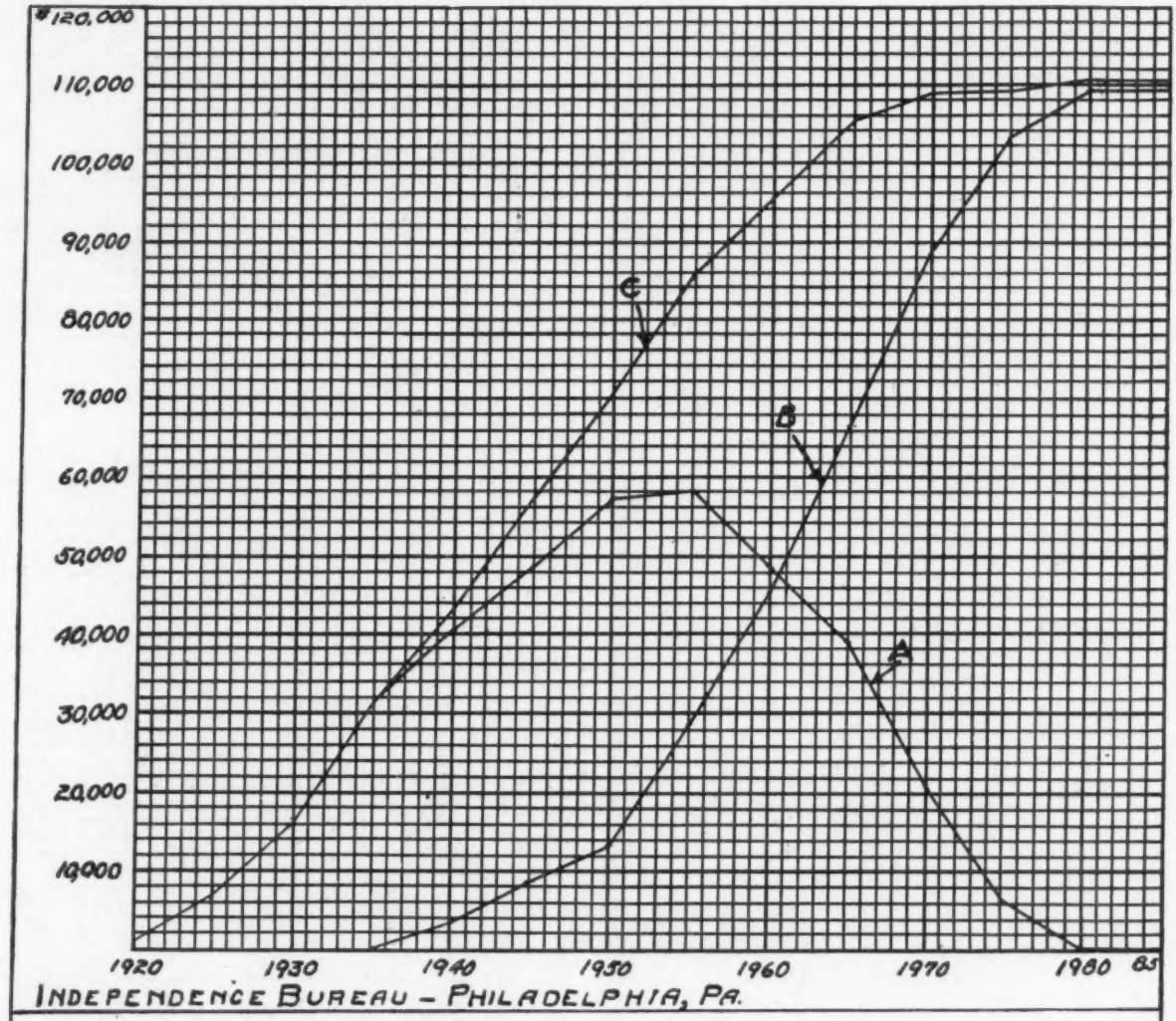
Estimating the cost of a pension plan is a highly technical problem requiring actuarial experience. Many companies have considered it sufficient to estimate the cost for a few years in advance. This is unsound, for pension costs usually increase for forty-five or fifty years after a plan has been installed, providing the company remains substantially the same size.

Under a pension plan which has recently been carefully calculated, the yearly outlay at its highest point (fifty-seven years after its establishment) will be seventy-eight times the outlay the first year of its establishment, nearly seventeen times the outlay in its fifth year, and seven times that of its tenth year. This makes it necessary to fund pension plans far in advance of the time when these annual payments to pensioners will reach a maximum.

The cost of the plan just referred to is shown in the chart. The curve marked A shows the amounts which must be paid out each year in pensions to present employees of the company. Curve B represents the yearly amounts to be paid to all employees who must be hired in the future, in order to maintain the plant at its present size. Curve C represents the sum of A and B, or the total cost of the pension plan, year by year.

The second chart compares the total cost of this plan with that of two other plans. A general tendency may easily be traced in these curves, but the cost varies widely, as the three plans are different in various important details and the plants are not all of the same size. A seemingly slight variation in plan may make a large difference in the cost, and even the same plan may cost much more in one plant than in another of the same size. This variation is caused by the factor of labor turnover. A plant whose employees are satisfied and stay with the company all their lives will have to pay out in pensions much more than the plant with a high labor turnover, whose employees rarely stay long enough to be pensioned. Thus it is practically impossible to formulate any general scale of pension costs. The cost of each separate plan must be figured individually for the plant where it is to be installed, taking into consideration not only the life probability and the length of life on pension, but also the probability of remaining with the company.

When the cost has been ascertained the problem of financing the plan should be attacked. There are several methods of financing a pension plan. Some plans have no definite fund, but meet costs as they arise, charging pensions to operating expense. This arrangement is the least



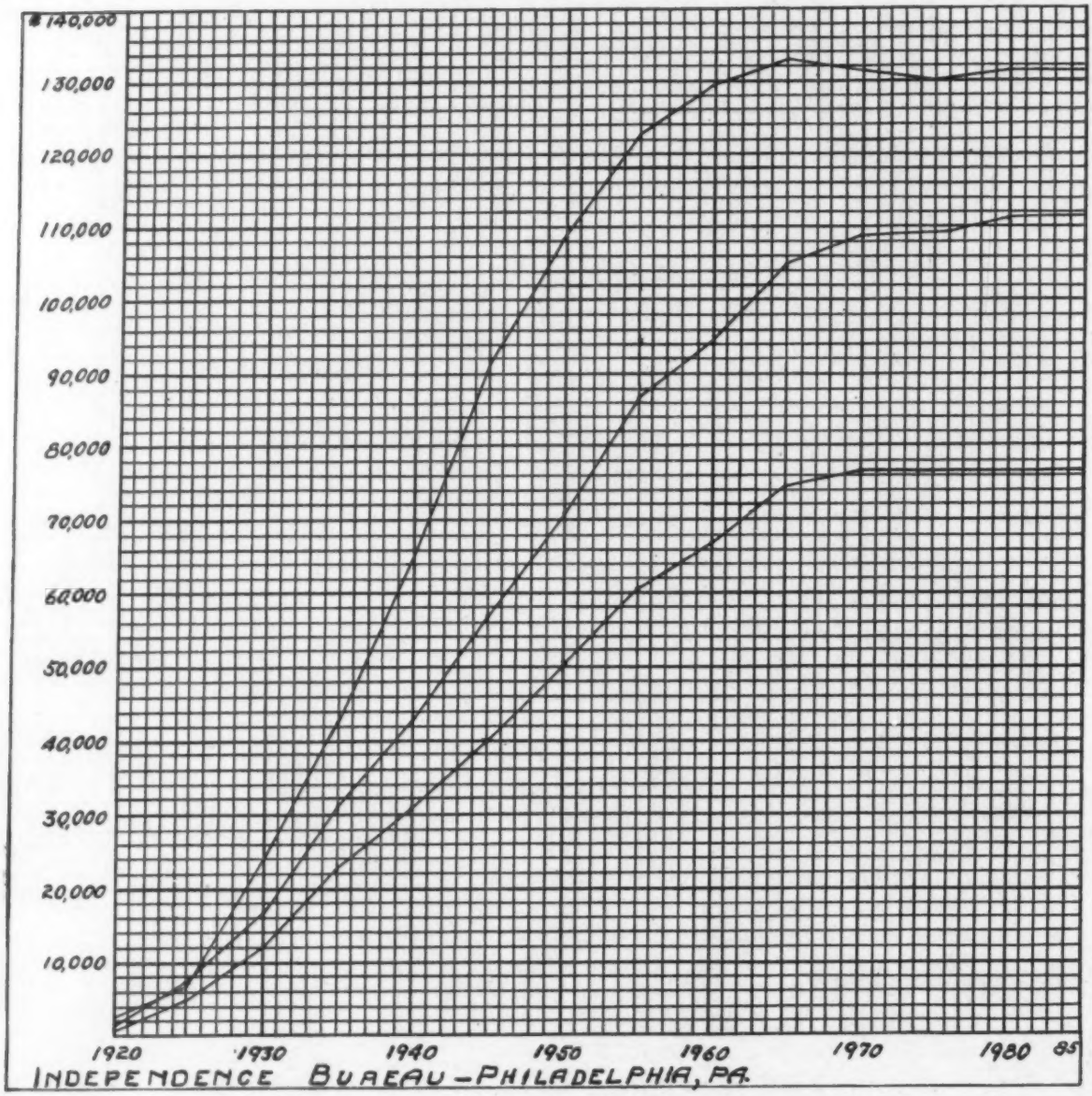
A. YEARLY AMOUNTS TO BE PAID IN PENSIONS TO PRESENT EMPLOYEES.
B. YEARLY AMOUNTS TO BE PAID IN PENSIONS TO NEW EMPLOYEES WHO MUST BE HIRED TO MAINTAIN THE PLANT AT ITS PRESENT SIZE.
C TOTAL YEARLY AMOUNTS TO BE PAID IN PENSIONS TO ALL EMPLOYEES (ANNUAL COST OF PENSION PLAN.)

PENSION PAYMENTS
TO PRESENT AND FUTURE EMPLOYEES

desirable from the standpoint of both employer and employees. It is likely to involve the employer in high costs without provision for meeting them, and it presents no sufficient assurance to the employees that they will receive pensions when they qualify.

The most satisfactory method, so far as the employees are concerned, is the provision of a large initial appropriation, the interest on which will care for the pension payments perpetually. To insure them absolute security the employees would like to see the money and the operation of the plan in the hands of a trustee. With a growing plant, it is of course impossible to prognosticate the cost so that an initial appropriation will care for it because the rate of future growth is unknown. It is usually necessary to make additional appropriations commensurate with the growth of the plant. Where the fund is to be cared for by a yearly appropriation equaling a certain percentage of the payroll this percentage can be approximated for a long time in advance.

Rarely is it feasible for a corporation to appropriate in



ANNUAL PENSION PAYMENTS UNDER THREE DIFFERENT PLANS, SHOWING IN GENERAL THE RATES OF INCREASE.

advance a sum sufficient for all pension needs. A modification of this plan, in which a smaller initial appropriation is supplemented by yearly additions, is therefore more generally applicable. If the cost is properly calculated in advance and checked up at regular intervals, this plan proves very attractive to both employer and employees.

The fourth plan requires the annual appropriation of a specified percentage of the payroll, without any initial fund. The unused portion of the appropriation in early years builds up a fund sufficient to cover the excess of payments over appropriations in later years. Increases in size of plant or advances in wage level are automatically cared for by basing the appropriation on the payroll. Under this plan, the burden is usually the most easily carried, as it distributes the cost evenly over a long period of time. It also furnishes a fair degree of surety to the employee, if the employer adheres strictly to the plan in making his yearly appropriations.

It is preferable that a plant adopt a pension plan early in its history, as thus it increases the period over which the plan serves to hold employees and costs are spread over many years, rather than paid out of earnings of future years. Theoretically, when the first employees are hired, a pension plan should be adopted and a definite percentage of the payroll laid aside annually. A fairly liberal pension plan could be operated at a cost of one per cent of the payroll, if started early enough.

Practically, of course, executives do not have the matter brought to their attention soon enough, or the finances of a new organization are needed for other purposes, so that pension costs are seldom held down to this figure. It is possible, however, to start a plan soon enough to keep

down to limits which the average industry can afford.

Many employers rush into betterment work without sufficient consideration of the fundamentals involved and without adequate preparation for its installation. In order to reap the benefit of any so-called "welfare" activities, the employer must take care that the employees not only understand thoroughly what it is all about, but also that they realize its benefit to them and feel a genuine interest in it. Therefore it is often wise to consult the employees before a pension plan is adopted, and allow them to have a hand in its preparation.

Above all, the employer should know definitely what he intends to do and how he is going to meet the obligation, he should put the plan on a definite basis, and should make his intentions known in an interesting "human" way. A mere formal announcement of the facts is not sufficient. The idea must be "sold" to the employees. And in doing so it must be remembered that employees are reasoning and reasonable human beings, and will not be satisfied by any but a workable, well-grounded plan.

Pensions pay. The benefits to an employer are intangible, and ordinarily inseparable from those attributable to other causes. But the advantages, nevertheless, are there. They will fade, however, and ultimately vanish unless:

1.—The plan is definite and is wisely devised;
2.—Costs are carefully calculated;
3.—The plan is properly funded; and
4.—It is "put across" effectively so that it wins the employees' approval and interest.

If these four fundamentals form the cornerstones of a pension plan it will render signal service to the corporation which has established it.

Trading with the Far East.

Foreign trade data brought down to date and a wealth of information on the commercial possibilities of the countries of the Orient from the standpoint of American importers and exporters are contained in the new edition of "Trading with the Far East," which has just been issued by the Irving National Bank of New York.

America's commerce with the Far East last year exceeded $2,000,000,000, or more than 15 per cent of our world trade.

"These figures," the volume says, "furnish ample ground for the belief of many that the greater future of American trade lies across the Pacific rather than the Atlantic. Every trade report and every returning trader brings the message that Asia—that continent of tremendous distances, vast man power and potential natural wealth almost unbelievable—is only at the beginning of a marvelous development and that the stage now is set for her economic awakening. In this development it would seem that the United States must have a part. Our position as the nearest nation which produces in quantity the things which the Orient needs compels it."

Detailed information on the commercial, industrial and natural resources of every country in the Orient which is a factor in foreign trade is compiled in the book, which is a volume of 320 pages. The countries treated include Japan, with her territorial possessions of Chosen and Formosa; Siberia, the Chinese Republic, the Philippines, India, Ceylon, Afghanistan and Baluchistan; Siam, French Indo-China, the Straits Settlements and the rich islands of the Dutch East Indies. Trade needs, customs and methods of business in each of these lands are described as well as the racial characteristics of the various peoples which inhabit them. Of China, about which COTTON has printed many articles, the book says:

"The country is at the beginning of an industrial development of vast possibilities. In the next few years she must have roads, railways, waterways, telegraphs and posts. Her coal and iron must be brought out of the ground and methods of transportation devised that they may be utilized. She wants machinery, bridges, railroad materials, factory and mining equipment and public utilities, and to obtain these, needs outside financial aid. Her selling power must be developed before she can buy. Once this has been accomplished, her great population offers possibly the largest return of any investment in the world."

On trade possibilities between the United States and Japan, the author says:

"The two countries are ideally situated for commerce. For twenty years, the United States has been the best customer Japan has had in the world market. There appears no reason why this trade cannot continue as the products we get from Japan are such as we cannot produce ourselves. Japan, on the other hand, should buy even more from us than in the past. The war brought to us Japan's custom in many things—notably machinery and products of iron and steel—which formerly was given to Great Britain and Germany. These products she should continue to buy. In addition, there is the demand for raw materials which this country always has supplied and which should increase as Japan's industrial activities expand."

Special attention is given to the technical aspect of the business of exporting and importing. Methods of organizing one's business for overseas trade and selling goods in Eastern countries, together with the preparation of documents for incoming and outgoing shipments, are dealt with in detail. Separate chapters are devoted to the functions of banks in the financing of import and export trade, the important subject of marine insurance, the value of advertising, routes for salesmen, tariff information of the various countries and the packing of merchandise for transport to distant lands. In addition, the volume contains a wide range of miscellaneous information, all of it designed to be of value to the foreign trader. The motive for the book is explained in an introductory word as follows:

"The book undertakes to provide an interpretation for commercial purposes of conditions in these countries, with a general analysis of trade opportunities and possibilities for development of the Orient's resources. In short, it endeavors to do for the Far East what has been accomplished for our neighbors to the south in 'Trading with Latin America,' also published by the Irving. Together the books cover fields which offer exceptional markets, perhaps the best for American trade for years to come."

Universal Winding Company has opened a new office at 1121 Candler Building, Atlanta, to supplement the office at Charlotte which is under the direction of Frederick Jackson. The new office in Atlanta is in charge of Winthrop Warren, who will take care of the company's interests in Georgia, Alabama, Mississippi, Louisiana and Texas.

South Carolina Cotton Manufacturers Meet

An important event of Show Week at Greenville was the meeting of the South Carolina Cotton Manufacturers' Association, which was held in Cleveland Hall on Tuesday morning, October 19, the session being called to order at 10 o'clock. In the absence of James D. Hammett, president of the association, its vice-president, A. F. McKissick, of Greenville, presided.

Much interest was evinced by the cotton manufacturer members of this organization and a goodly number of members was in attendance. It is stated that at a conservative estimate 75 mills and all sections of the state had representatives at the meeting.

After the reading of the minutes of the last meeting, the president's address was read by Vice-President McKissick. This was a short but interesting paper dealing chiefly with present conditions in the cotton manufacturing industry. Following came the reports of the various committees and the financial report of the association, read by Secretary Sullivan. George W. Forrester made a brief report for the traffic committee; John W. Arrington for the coal-buying committee; John A. Law for the membership committee and Alex Long rendered the report of the educational committee. The entertainment committee's report was given by R. E. Ligon.

PRESIDENT JAMES D. HAMMETT.

Following these reports was the feature of the meeting, an address on the tariff question by Albert Greene Duncan of Boston. Mr. Duncan, who has made a thorough study of this great problem, presented its characteristics in a clear and forceful address. He pointed out that the tariff question, which has previously been considered of sectional interest, is now a nation-wide issue. He quoted the Democratic nominee for the vice-presidency of the United States as saying that seven years ago the tariff problem was taken out of politics by the appointment of the tariff commission. In refutation of this statement, Mr. Duncan presented the fact that the tariff commission was only an advisory body and that under the Constitution, only Congress can enact and execute tariff bills.

For the first fifty years in the life of this republic, said Mr. Duncan, the tariff was not considered a partisan question. The fathers of the country perceived that it must depend upon its own resources and could not rely upon imports from foreign lands. He quoted several pioneers of the country to indicate that they believed in, and supported, a protective tariff, and discussed the differences between the North and South over the tariff question prior to the Civil War. Then the South was an agricultural section while the North had its manufacturing plants. But now, the speaker stated, when the South has developed its industrial plants and is not almost wholly an agricultural section, as before, it is most unfortunate that it adheres to what is considered a practically "free trade policy."

In closing, Mr. Duncan advocated a high tariff to stay a still greater depression. Without such a tariff, he stated, the revival of industrial activities in Europe and other foreign countries, and the rehabilitation by those countries of their manufacturing plants, will indeed become a great menace to American business. Legislation upon the statute books of the country to protect American trade from a flood of importations is needed to prevent a greater depression in industry and unless such legislation is put in force, said Mr. Duncan, American business and American trade will be seriously hampered by an influx of foreign products.

At the conclusion of Mr. Duncan's remarks, Captain Ellison A. Smyth offered a resolution thanking Mr. Duncan for his illuminating address on such a potent subject which the association unanimously adopted.

Following Mr. Duncan's address was a talk by B. F. McLeod, chairman of the national finance committee of the American Cotton Association, who presented the cause of the farmer and of the American Cotton Association, bespeaking the aid and cooperation of the manufacturers in assisting the growers of cotton in averting a "disastrous bankruptcy" which, he stated, was seemingly inevitable should the supply of cotton now being held by the producers be disposed of at present prices.

This address was enthusiastically received and on motion of B. E. Geer, the association unanimously passed a resolution in which it was stated that as a body the association extended its sincere sympathy for the cotton farmers in the drastic change in the present values of raw cotton, and urged them to gradually market their staple crop, hoping by this means that prices will shortly advance to at least the cost of production.

Following this action, the association members, after an executive session, repaired to a luncheon in the Knights of Columbus Hall as guests of the Greenville Rotary Club.

The Human Element of a Cotton Mill*

BY ROGERS W. DAVIS.†

I am greatly pleased at this opportunity to come before you men of the Southern Textile Association, more pleased than if I had been invited before either the American or the National Association. The members of those associations may be the heads of the cotton mill body, but you men are the hands and arms. They as heads may furnish the executive ability and capital, but the heads can accomplish little without hands and arms.

You men are the connecting links between capital as embodied in the machinery and equipment of a cotton mill, and the operatives who are the human element of the organization. It is as elemental as saying that two and two make four, to say that investments of capital must earn dividends, else capital will not invest.

Cotton mill companies have invested many hundreds of thousands of dollars in labor-saving devices, high speed spindles, automatic looms, warp drawing-in machines, automatic card strippers, all to save cost of labor, or number of hands required. Yet many of these devices, by the saving in labor costs, are earning a sufficient amount on the investment to warrant further investments in carding and spinning and weaving, thereby putting back to work at other places in a mill that labor which was saved, and thus calling for more capital to be invested.

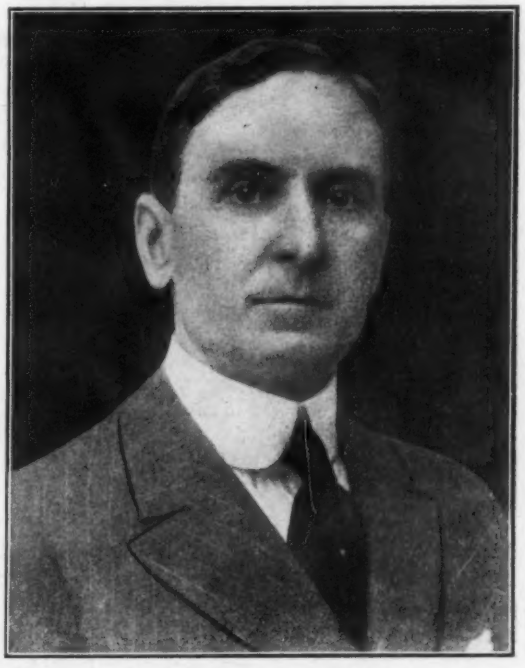
The textile machinery shops have spent thousands of dollars in perfecting the design and construction of machinery, in order to reduce the wear and tear on machinery, to lengthen its life, to safeguard against careless and incompetent attention. They have lavished time and money in efforts to make machinery fool-proof. I could name many details of machinery with which you mill men are thoroughly familiar, with which you come into contact every day, which have been developed or applied, for no other reason than that of preventing the results of carelessness and incompetency. This spending of money by the machine builder adds to the cost of the machine. He adds it to the price of the machine, this calls for more capital, and reduces the earning on the investment.

Incompetency or inattention has still another effect in reducing the earnings on investments. All of you know of cases in your mills where either incompetency or inattention has required you to put three hands on a job where two should suffice. Stated in another way, three machines were required to produce the work that two should produce. Again, we have an unnecessary investment of capital, which might be put into more mills, more carding and spinning and weaving.

I might go on naming examples of where the human element, through incompetency or inattention, or through a lack of the proper attitude of the operative toward work, was affecting the earnings on the investment in the plant. We owe it to the corporation or organization for whom we work to overcome this incompetency and inattention, this inefficiency. But we owe a deeper, greater debt to humanity to overcome this inefficiency, to make better workmen of these people, better citizens, happier, healthier and more prosperous citizens.

The cotton mill operative is quite frequently looked on as only a mill hand. Many of them feel that this is the attitude toward them. Many of them go home—socalled—after a long monotonous day's work and find little of cheer and comfort and have little of hope and ambition to carry them into the next day. I know many of you are doing wonderful work with your mill people, all are making them more comfortable and are paying more attention to their welfare than was paid twenty, or ten, or even five years ago. But I have heard many times such statements as "Why put bath tubs in their houses when they will put potatoes or coal in them instead of washing in them?" There is something wrong somewhere when they do not want to wash in them.

The cotton mill population of the southern mill district are Anglo-Saxon, the same blood as yours and mine. I



ROGERS W. DAVIS.

am familiar with conditions in other sections of the country and I tell you that we do not fully realize and appreciate the difference that exists in our favor in the race type of our mill people. They have a racial instinct for law and order. They have our language, they can be taught.

Many of you have come right along up from the rank and file of that people to your present position of overseer, superintendent or manager. You owe it to those others to show them the way. If you had a helping hand, you in turn owe a helping hand. If you had to fight your way along, without guidance and encouragement, you know only too well what guidance and encouragement will mean to those others, and you cannot fail to give it.

There are those of you who have come along through the gates of opportunity, who have had education and training and home influences, (the greatest asset of them all) and you owe a debt to those who have toiled and

*An address before the Southern Textile Association.
†Southern Agent, Saco-Lowell Shops.

created, that others like you might have those advantages.

We all stand on one common platform of responsibility toward our fellowman. We are our brother's keeper. We are bound to do unto others as we would have them do unto us. If we propose to serve these people, it must be done, not alone with the eye and thought on those wasted dividends, but with a warmth of fellowship that will carry a conviction of sincerity with it. We must do it because they are people, because they have a right to comfort and learning, joy and happiness.

It will probably be difficult to get this entering wedge of fellowship and service, into what may be a hard shell of long standing prejudice and lack of confidence in your motives. But the results are bound to be worth years of effort. The Prussian leaders were very wise in their day and generation, when they said "If we are ever going to get this ideal that 'might is right' into the lives of the German people, we have got to go back and start with the boys passing through what is called the 'storm and stress' period." So they went back, and because they presented it to the boys—that false, barbaric idea of domination, of mastership, of the strong lording it over the weak—in less than forty years, every last mother's son of them seems to have believed in that false ideal to the point of laying down his life for it.

If the Prussians could instill so hideous and false an ideal into a whole people in this way, with how much more infinite ease should we be able to instill into people of our own blood and race the ideals of the sermon on the mount. And with the acceptance of the ideal comes a material prosperity and happiness, growing with each step that we make in our efforts.

Then let us begin with the boy, and the girl. Great, earnest students of boy life have worked out the fact that there is what may be called a "storm and stress" period in boys' lives, and this is between the ages of ten and twelve years, and sixteen. Those are the years in which boys are most likely to be influenced for life, for either good or bad. Now it is proposed that you build up the efficiency of the human element in your mill by making men out of your boys, and women out of your girls. How can you touch the boys of your mill community?

I recently heard a wonderful Canadian Y. M. C. A. worker tell of the easiest approach to a boy. I have just told you that there is a storm and stress period of boyhood between ten and sixteen years. One of the biggest influences with boys at that age is the "gang" influence. When I say "gang" influence I do not necessarily mean a bad gang. It is that influence which comes into the life of a boy and prompts him to be with another boy. Very soon you have a crowd, and it is in that crowd that the very highest things of life may be developed. It is only in a gang that a boy may learn self-reliance, unselfishness and true democracy.

Watch boys play baseball, say a crowd of kids eight to ten or twelve years old. Every last boy wants to bat first. The biggest fellow (the German idea) comes in there and he that is strongest comes to bat. Then the other positions are all fought for in the same way, they have a dozen fights and perhaps some one fellow gets a whack at the ball. Then they all go home and think they have had a great time.

Watch that same crowd at sixteen years of age. There is no fight. Bill goes in to pitch. He is the real pitcher. Jim is catcher, Jack is on first, and so on. Then a fellow steps up to bat. Oh, he just wants to lam it out for a home run. He thinks he has got that pitcher's goat, it looks easy. Perhaps his girl is over there on the side line, sending wirelesses across and he would just love to show her what he can do. But he sees Tom over there playing off third base. He knows that the game is not to take chances of anything spectacular that is going to bring something to himself, it is no time for a grandstand play, but he will take a short grip on his bat or in some way he will get that ball slowly down the base line so that Tom can get home. He will get put out at first. The crowd will yell their heads off, for Tom has scored another run for the team. But he knows as he walks away that he has made a sacrifice hit—a sacrifice for team play.

There is no other way by which a boy can so surely be saved from selfishness as by being a member of a gang. There are boys and men who are selfish, vain, self-centered because they have not had that opportunity to develop team play, cooperation that comes from being a member of the gang. So get the boys into gangs, into clubs, into organization. Teach them systematic organized play. Teach them real baseball, not the "toss-up," town-ball affair, but see that they have uniforms and teams and real matches. See that they are properly coached, better still, coach them yourself. That would bring you to the next great influence in every boy's life—hero worship. It is instinct in a boy which makes him fall down and worship, almost, the man in whom he believes. A man does not have to be much of a hero in the sight of other men to be a hero in the sight of a boy.

Take advantage of his gang influence and his hero worship instinct and lead him into Sunday School. Here he can get the only real solid foundation on which to build character and efficiency. You can see that the Sunday School is made attractive and interesting to him. If you haven't a Y. M. C. A. in your mill village, then get one. Make it a club, have a gymnasium, a swimming pool, good music—the gang influence will bring the boys if you do your part. I believe the organization which will appeal most to mill community boys is the Boy Scouts. The uniforms, the drilling, the hiking and camping, the woodcraft and all the fine things of outdoor life are embodied in the Boy Scouts. Then they teach real manliness, unselfishness, service, fellowship, thrift, thoroughness, efficiency. They teach a real love of home, of flag and country. The gang influence reaches its climax in the Scouts.

There is hardly a mill community in all our South now so poor but has its school. In most mill villages the school is under the direct control of the mill management and this gives you an exceptional opportunity to make the school efficient. It should be a nine-months school and attendance should be compulsory, for boys and girls, up to sixteen years of age. There are few rules without their exceptions, and there are cases where children of school age must work, but the mill and school authorities should scan any such case with great care. It is up to you to see that your teachers are competent and have that sympathy for the child so necessary in the successful teacher.

See that those things are taught which make for good American citizenship, thrift and industry, a respect for the rights of others and for the rights of property, a

respect for law and order, for truth and honor, and a love for home, state and country. See that they are taught that if they are paid a dollar in wages, that they in return must give a dollar's worth of work.

With the school, there should be competent free clinics for teeth, eyes, ears and throats and inspections should be frequent and thorough. It seems elemental as A B C to try to impress upon you men the importance of health as relating to efficiency.

One of the greatest obstacles to efficiency in our mill people is poor health due to improper food. Most of our mill people have come from the mountain sections of the South. I am a native Southerner, born on a farm in Georgia. I worked several years in the mountains of Georgia. I saw these people in their native country, saw their mountain hovels and ate of their insufficient poorly cooked food. No wonder they are lean and gaunt, old before their years. No wonder they are lazy and with no ambition. They are immeasureably better off in any mill village in the South than they are in those mountain homes.

A man who owns a mule sees that he is given certain foods that will give strength and staying qualities and sees that they are given in the right proportion to get the best out of that mule. A man is an animal to the same extent, that food plays a great part in his efficiency. Why not pay some attention to the class of the food and the cooking of your mill people? I know the answers of many of you—I have been up against it myself.

Such work can't be done in a day, nor a month. But you have got to begin with the children, teach the young girls household work, just as you teach them to spin or weave. Teach them to cook. Get them away from their greasy frying pans and their leaden biscuits and soggy corn pones. The mothers are not going to change, but the girls can be taught that biscuits can be made just as easily and as cheaply, that are good to taste and are digestible, as can the kind that are called "sinkers." You can do this teaching. In a recent issue of COTTON there is a description of the efforts of a prominent southern mill to do something of this sort. I commend this article to you.

With good wholesome food will come health and happier people, more contented.

All that I have said leads to efficiency. It leads to a full realization on the part of the operative of his responsibility toward his job and his employer.

This increased efficiency of the individual operatives will mean greater production, greater profits, fewer worries and fewer disappointments. And then there will come a greater blessing than the dollars of profits, and release from bitterness. There will come a benefited humanity, a people turned into a citizenship. There will be happy contented homes, people with minds and hearts filled with something of brightness and hope, forward looking Christian people. There will be no place for strikes nor Bolshevism.

Cotton---Staple and Character*

BY P. H. PARTRIDGE.

In addressing you on this subject, I have had to grope in the dark for my approach. Our point of contact is, of course, raw cotton. But the technical knowledge that you have of cotton has been acquired through your observation of mechanical processes which are more or less exact, while the technical knowledge that shippers have of cotton has been acquired through experience in the classification of that cotton with the aid of their hands and their eyes and their judgments, and these last, however expert, are more subject to error than the machines. Cotton is spun under conditions of regulated temperatures, and with the proper degree of moisture furnished by humidifiers, while cotton is classed under uneven conditions of temperature and humidity. We are attempting to supply to an almost exact scientific industry raw materials which are selected according to standards that cannot be exact. The cotton that the shippers supply is selected according to order, just as your cloth is made according to specification. But the cotton from which these shippers must draw their supplies is not made to order.

When spinning was first begun, the use of wool or cotton or other fiber, whether animal or vegetable, was merely an adaptation of that article to the need of the time. But when the demand for that article became greater than the natural supply, and care had to be exercised to increase that supply, whether by conservation or cultivation, then the supply was following the dictates of demand. As the supply caught up with and, at times, passed the demand, in theory, at least, more and more care had to be taken that the supply conformed to the requirements of demand—otherwise, the demand would settle on one certain kind of cotton to the utter neglect and consequent sacrifice of the others. Unfortunately this policy of production has not been carried out. This failure to constantly improve the character of cotton as the years pass cannot be laid to the farmer alone. His index of demand is price. The Department of Agriculture of the United States, and of individual states, as well as many individual planters of cotton, all are making laborious and careful experiments, leading to the improvement of the quality of cotton, both as to length of staple and to character, but all their experiments, and all their propaganda, will be of small avail unless the commercial demand for better cotton is universal and carries with it the substantial premium.

It had been my intention to keep entirely away from the subject of price, but it is in line with this paper. The farmer is contending with all his means to secure higher prices for his cotton, and I hope he wins provided he does not go to unreasonable lengths. The making of cotton prices is the most haphazard piece of accident that occurs in the business world; and, sometimes, it looks as if the speculator, the only member of the great "Price-Fxing Board" who has no substantial investment in the business, has more influence over prices than any other. Stability of price is the ideal condition, but the day-by-day speculator can only profit by erratic markets. We are talking now about prices as they affect your business and ours. It is certain that the farmer will pay less attention to quality and to economy and to conservation (for instance as it affects protecting cotton from the weather) if his profit or loss in the making of the crop is entirely dependent on the rise and fall of a market in the control of which he has no part. And if the farmer concludes that only small crops will net him a fair return for his labor, the yields

*Extracts from an address before the Southern Textile Association.

will be so restricted as to curtail the building and operation of mills.

It might seem that the commercial side of manufacturing, that is the buying and financing, and the selling and delivery of the finished product, has all to do with price of cotton to the complete exclusion of the industrial side of manufacturing. But such is not the case. The men in your mills who buy the raw cotton must limit the prices they pay for that cotton by what they get for the goods. Dividends cannot be earned unless there is the necessary margin between the price of raw and finished product. Under your hands lies a big part of that necessary difference. We, who are the distributors of cotton, all the while we talk price with your buyers, must look over their heads towards you who have in your care the industrial side of the cotton manufacturing business. It is your part to adapt the cotton we ship you to the machinery you have installed, to keep your labor satisfied with that cotton, to make that cotton into specified constructions, and all the while to keep production at the highest or most economical level. But at times there is not that proper margin between the price of raw material and finished article, and the mill buyer will not pay the price—with a mental picture of what will be required when the time for shipment arrives, the poor cotton salesman begins to believe in a personal devil. The desire to sell what he has in hand, rather than what the mill wants, at times, quite overcomes the salesman. He tries to make the buyer, the superintendent, or anybody else he comes in contact with, believe that thirties or forties or sixties or anything else can be made out of the cotton he has for sale. And, sometimes, he is honest in his belief, however little he may know, and indulges in a patter that must seem pathetic to you people who know what you want. But just there is the vital part of our business—*we must know what you want and where to get it* or we fail to live up to our part in the scheme.

The questionnaires which I understood are being sent to all mills represented in this organization, will bring back the experience of a great number of mills; and the tabulated information which you can secure from your Foundation will enable any mill to boldly embark on new work, with full confidence of success. And, too, that information will enable a mill going on new work to intelligently and promptly acquaint shippers with its needs. What exchange of information of this kind may mean can be illustrated: Mr. Roediger, the cotton buyer for the Riverside & Dan River Cotton Mills, showed me boxes containing bleached and grey yarns made from cotton of exactly the same grade and length of staple but selected from different sections of the country. These yarns were made in those mills under the most careful Government supervision, and the most minute record of waste was kept; and the variations of waste in the same grades chosen from different sections was marked. And the difference in breaking strength between these grey yarns made from cotton shipped from two widely separated sections was even more marked. These were 22s, warp yarn, both the same twist, 24.4 turns per inch. The grey yarn made from Good Middling, one inch, from one section showed a breaking strength of 62.2 pounds to the skein, and the Good Middling, one inch, from the other section showed a breaking strength of 73.3 pounds per skein! For the better illustration I have mentioned the extreme difference, but the other differences were very substantial.

But we must not only know what you want. To carry out our part of the contract, we must demand from the farmer, by carrying the price in our hands, the right kind of cotton. And we would like to find that kind of cotton in the same locality every year, if it is humanly possible to arrange it. The approach to that is for the farmer to consistently plant each year the variety of cotton which is best suited to his lands, and, weather conditions permitting, the result will be satisfactory. Otherwise we find in one locality, one year, excellent cotton; in another year, mongrel stuff. But it takes a true enthusiast to continually work for the improvement of his product without receiving a substantial reward. We are all interested not only in stabilizing the price of cotton, but also in recognizing and establishing premium for cotton of excellent *character*.

We cannot stress too much the importance of character in cotton. Government types have established fairly well the grades; staple lengths have been threshed out in arbitration and dispute so often that shippers and manufacturers alike have come to a fair conception of the different lengths. But it is character that is hard to appreciate. It was character that made the greater strength in the yarn test about which I have told you. It is a factor that runs all the way from the retailer who wishes to present to his customers, over the counter, a piece of goods that will outwear what his competitors' have to offer, right back through the channel of wholesaler and jobber to the manufacturer, who may have to show a certain breaking strength or have his goods thrust back on him. Your problem is to acquire that breaking strength. Your skill will enable you, in many instances, to take inferior cotton and turn it into superior goods. You can take cotton that is bought for filling and make it answer for warp, but you can't put strength into it. When you make soft yarns, where breaking strength is not of prime importance, the softer cotton, for the sake of economy, is the thing to buy. But if you want strength, buy hard cotton, cotton with character.

I heard a very fine cotton classer say once that in every shipment of cotton there are three kinds of cotton—the right cotton, and some not quite so good and some a little better. That variation sometimes is the measure of the classer and sometimes it is not. No one need tell you that no one hundred bales of cotton is exactly alike. No one need tell you that every bale of cotton contains fibers of different lengths. Why the fibers on every cotton seed vary in length. Absolute uniformity in staple length is therefore, an impossibility, but certain kinds of cotton approximate uniformity, and that approach to uniformity is a characteristic of the hard, strong cotton of which I speak. Some day some great breeder of cotton may produce a plant that bears a round seed on which every fiber is the same length. But that won't be tomorrow.

A recent fire in a bale breaker room in a southern mill caused a loss of about $1,500 in cotton and other damages. It was "probably caused by friction in one of the bearings."

Four days earlier a New England mill had a fire caused by an overheated fan bearing that entailed a loss of several hundred dollars.

The proper application of roller or ball bearings eliminates trouble with such frictional fires.

Has Bank Credit Been Curtailed?*

BY CHARLES A. PEPLE.†

There has been no curtailment of the amount of bank credit outstanding. On the contrary, there has been a continuous expansion, and, within the last fifteen months, there has been an expansion of commercial loans among the banks of the Federal Reserve System alone amounting to two billion dollars; and, at the same time, of loans for commercial and agricultural purposes made by the Federal Reserve banks to their member banks of more than eight hundred million dollars.

The facts which I give can be easily verified, and the statements I make will, I trust, carry conviction.

In the period from June 30, 1919, to June 30, 1920, (the later date being the most recent period to which the figures have been compiled), the total loans and discounts of all member banks of the Federal Reserve System (including state bank and trust company members) increased from $17,553,000,000 to $19,634,000,000, an increase of $2,081,000,000.

Since the beginning of the current year, or, to be strictly accurate, from December 26, 1919, to August 20, 1920, the commercial loans and investments of all member banks which reported weekly to the Federal Reserve Board, which member banks comprise about 70 per cent of the resources of all member banks, have increased $2,038,000,000. During that time loans secured by Government war obligations and loans secured by other stocks and bonds decreased, as was naturally to be expected under existing conditions, as follows:

	Loans Secured by Government War Obligations.	Loans Secured by Other Stocks and Bonds.	All Other Loans and Investments.
Dec. 26, 1919	$1,020,000,000	$3,300,000,000	$ 9,370,000,000
Aug. 20, 1920	959,000,000	3,005,000,000	11,408,000,000
Decrease..	$ 61,000,000	Decr. $295,000 000	Inc. $ 2,038,000,000

As to the loans made by Federal Reserve banks to their members during the period, say, from December 26, 1919, to October 1, 1920: The total amount of all discounted bills held by Federal Reserve banks on

December 26, 1919 was	$2,779,000,000
and the amount held on Oct. 1, 1920, was..	3,010,000,000
An increase of	$ 231,000,000

This increase, however, by no means measures the aid given to member banks for commercial and agricultural purposes during this period, in which the loans made by Reserve banks on war paper (including certificates of indebtedness) decreased $327,000,000, and the amount of bankers' acceptances held by the Federal Reserve banks decreased from $585,000,000 to $301,000,000, a decrease of $284,000,000. These bankers' acceptances were supposed to represent in December, 1919, to a very considerable extent, loans against commodities which at that time were held on storage (or off the market), partly, at least, for speculative or profiteering purposes. It will be seen, therefore, that credit released by decreases in these two classes of loans, $284,000,000 in one case, $327,000,000 in the other, was put out in loans for more active and essential agricultural and commercial purposes, making a total increase of such loans for the period of $842,000,000.

The facts expressed in these figures are a complete repudiation of the charges that there has been "credit curtailment" or "domination over" either Federal Reserve banks or member banks which "forced banks to curtail credit."

Member Banks Credit Situation.

As to the member-bank-credit condition in the country-at-large: There are three sources from which banks derive loanable funds, first, capital, surplus and profits; second, deposits, and third (in the case of national banks), circulation In connection with the last item, it must be taken into account that banks first have to invest a part of their capital in Government bonds to secure circulation; but in the statement which I make, I will include such Government bonds on the other side of the balance sheet among the investments. The statement which I give is made up in the manner required of banks by the Comptroller for the purpose of estimating the reserves required by law, and is therefore substantially accurate:

The Capital, Surplus and Profits of all Member Banks in the Federal Reserve System on June 30, 1920, amounted to	$ 3,852,071,000
Deposits of all kinds amounted to	21,704,380,000
National Bank Circulation	$26,313,053,000
Other Promiscuous Items	155,443,000
Total	$26,399,547,000

These banks were required by law (for operating purposes) to keep a reserve amounting to $1,789,033,000, leaving *total funds for loans and investments of* $24,610,514,000.

It will be observed that the amount of reserve required to be kept on hand for operating purposes is equal to about 8¼% of the total deposits shown above, which include Government deposits. It is worthy of mention that this reserve is only about 50% of the reserve formerly required before the inauguration of the Federal Reserve System. The difference between present reserves and former required reserves is, therefore, rendered by the Federal Reserve Act available for loanable purposes. This statement includes the great banks in the Central Reserve Cities; New York, Chicago and St. Louis, where banks formerly had to maintain a reserve of 25% in lawful money.

Now, what proportion of this vast loanable fund had the banks actually put out in loans and investments? The facts, I have no doubt, will astonish you and the public at large. Witness the following statement:

FUNDS LOANED AND INVESTED.

Loans and Discount	$19,657,490,000
U. S. Government Securities	2,810,795,000
Other Bonds and Stocks	3,214,800,000
Invested in Banking House, Furniture and Fixtures, and other Real Estate	591,463,000
Other Promiscuous Items	38,505,000
Total	$26,313,053,000
Add Cash in Vault and Cash Items (being till money essential to daily operation but not allowed to be counted as part of reserve).	748,086,000
Making Total Funds Loaned & Invested	$27,061,139,000

It will be seen that the banks had loaned and invested, including banking houses and fixtures and real estate and cash required for till money $2,450,625,000 *more than their own resources available for such purposes.* I have made this statement in this strong form for the purpose of showing that the banks had exhausted their own lending power and had actually used up their reserve. Where can banks go for funds when the entire body of banks have used their capital and deposits? They cannot create capital.

*An address before the Greenville, S. C., Rotary Club and the Cotton Manufacturers' Association of South Carolina.

†Deputy Governor Federal Reserve Bank of Richmond, Va.

Have the Federal Reserve Banks Conducted a Campaign in Restraint of Trade?

One of the results of the old banking system often dwelt upon was the inflexibility of its reserve; reserves had to be maintained and could not be used by law.

Expansion to this extent was rendered possible only by scientific operation of the Federal Reserve System. The Act provides that only balances with Federal Reserve banks may be counted as reserve, and balances may be created by rediscounting paper. In order to reinstate their reserves which they had used, they were compelled to borrow from the Federal Reserve System, and they were borrowing at that time, that is, on June 30, 1920, $2,680,859,000. The banks ate their cake and had their cake! Surely this result of the actual banking operations in the period cannot be called a "great campaign in restraint of trade!" It has more of the aspects of a reckless-lending campaign by the banks themselves. Will you not admit that this indicated an unprecedented state of expanded bank credit, and that it called for caution and the exercise of moderation and restraint? The individual unit in banking operation in its isolation had no knowledge of the condition of the entire fabric. The public did not have the knowledge. Was it not the duty of those who had the whole situation in review to caution and admonish both the banks and the public as to the dangerous tendency in evidence? If you will examine the language of the public utterances in which this was done, notably the last annual report of the Federal Reserve Board, you will find it extremely temperate, considerate and showing a full understanding of the situation.

The amount of the reserve deposits of all member banks held by the Federal Reserve banks on June 30, 1920, was about $1,800,000,000. The Reserve Banks are required by the Act to maintain 35% of this amount as their reserve; of this sum they therefore had available for lending back to the member banks 65%, or only $1,170,000,000. As a matter of fact, they were lending directly to their members $2,680,000,000, and had purchased in the "open market," chiefly from their members, approximately $400,000,000 of bankers' acceptances, a class of paper created by the Federal Reserve Act. The member banks and the public received the benefit of this additional credit, making a total of reserve bank credit extended to the banks of $3,080,000,000, or more than two and a half times the amount of reserve deposits available for lending. This was rendered possible only by the note-issuing power of the Federal Reserve banks, more than three billion dollars of such notes being in circulation.

By the issue of these notes, the Reserve banks were able to keep their gold fund practically intact, but in considering this fund, the notes outstanding against it must be taken into account. In considering the profits of the Federal Reserve banks, it should also be taken into account that they are derived more from the Government-conferred power of issuing notes than from the deposits of member banks. And the surplus profits go to the Government.

This, then, was the condition of the Reserve banks. By these tranactions their reserve was brought down as low as 42% of their obligations.

Banking is a science. It is also a business of an entirely practical nature, and must be conducted in the light of experience and always with some reserve power unexpended and with due regard for safety. The entire banking system of the country would be threatened with collapse if the adequacy or safety of its final reserves were once seriously questioned.

I repeat that banks cannot create a capital supply. Nor can credit take the place of production and saving. It is only production and accumulation by saving which create capital and the bank-credit supply in the form of deposits. It is the people who create the supply. The banks only gather it in and lend it, and the lending power is limited by the supply.

How Has the South Fared During This Period?

There is no section of the country that has been as liberally dealt with as the South. And in that section of the country, if we read aright, we hear the loudest complaints and the most complaints. Perhaps she is suffering the most at the moment. Whatever complaint she may have, she cannot complain of curtailment of credit; and she has, in fact, been treated more liberally than any other part of the country, and capital has been drawn from other parts to lend her.

The Federal Reserve Banks of Richmond, Atlanta and Dallas were lending to their member banks on October 1, $427,000,000, which is four and a quarter times the amount that all the national banks of the country ever borrowed at any one time prior to 1914, before the establishment of the Federal Reserve System. It must not be overlooked that their own lending resources in deposits had about doubled, and they had exhausted them.

The amount of reserve deposits kept by members in the three Reserve banks mentioned was only $154,000,000. The three banks were, therefore, lending their members nearly three times the amount of their combined reserve deposits. To enable them to do this, they were rediscounting with the Federal Reserve banks in other parts of the country $112,000,000.

The total loans by these three Reserve banks to their member banks have increased $135,000,000 since December 26, 1919, and taking into account the fact that since the date mentioned loans on all classes of Government securities have decreased $19,000,000, there is evident an increase of $154,000,000, in loans made for commercial and agricultural purposes between December 26, 1919, and October 1, 1920.

If these three Reserve Banks had been confined to their own resources in lending to their members, they could not have granted the full volume of loans without going far below their own required reserves, under which condition, they would have been compelled by law to add heavy penalty to their rates of discount.

The Reserve banks deal with their members as the member banks deal with their customers. Every loan is made upon its merits, according to eligibility and the needs of the borrowing bank, which are carefully and fully considered in view of the circumstances and conditions. We are thus lending to a large number of member banks as much as ten times the amount of their reserve deposits, and in some cases considerably more. No bank should allow itself to get in a position where such excessive aid must be called for in the absence of a situation affecting its safety.

There is a limit to the floating supply of credit, and when banks have once exhausted their lending power, based upon their own available resources,—as I think I have proved they have done by the figures herein submitted,—they can

go no further. The Federal Reserve banks must then enter, and there is a limit to their power.

Where the Trouble Lies.

There is one vital essential to the healthy conduct of business. The supply of bank credit should be kept in a liquid condition, that is, when it is once used or put out, it should be for a reasonable time, to be repaid and used in other directions, or for the benefit of other customers. The congested credit from which the country is suffering is due very largely, if not entirely, to the character of many of the loans which the member banks themselves have made. To illustrate, it is manifest that if one bank lends all of its available funds to one person, no credit can be supplied to others who apply. It is equally manifest that if one bank uses all, or a large proportion, of its resources in making loans on long time, or loans which cannot be collected to meet shifting commercial and agricultural needs, it will quickly come to the end of its lending power.

Apply this illustration to the entire body of banks, for the principle runs straight through, and the causes of the present congestion are determined.

I have now in mind the condition of one bank in the cotton and tobacco section. It is lending more than its capital and surplus and nearly one-half of all the money it is borrowing from the Federal Reserve Bank to a single class of borrowers, who are not concerned in either tobacco or cotton production or manufacture.

It is essential that the major portion of the loans of commercial banks shall be kept in a liquid condition. This principle is violated more among country banks than by other banking institutions. They pay too high a rate for deposits and when "money is easy," they lend freely on all classes of paper; when money is "tight," they cannot call in many of their loans needed for production. I deliberately make the statement that far too great a part of bank funds is tied up in permanent or capital loans.

As to the domination of the Federal Reserve Board: It must be clear that if the Board has sought to dominate, that is, if it has sought to compel banks to control the volume of their loans, it has failed in its purpose. We frequently read editorials about the "iron grasp" of the Board on the country's credit, and the "throttling" of industry by the "cutting off of credit supply." The Federal Reserve Board has very little direct power over the granting of credit even by Federal Reserve banks. All of the Federal Reserve banks have discount committees, composed of officers and directors. Directors represent the banks as one class, industry as another class, and the Government, or the general public, as a third class. In all cases the directors of Reserve banks play a prominent part in determining the policy and practice of the Reserve banks.

The Federal Reserve Bank of Richmond has on its directorate a merchant, who is also prominent in civic and public affairs in Washington; one director connected with a very large manufacturing and contracting business in Baltimore; one man in Richmond, the President of a large life insurance company, who is connected with cotton-mill enterprises and who has been a merchant; one man in South Carolina, who is at the same time a farmer, a merchant and a cotton buyer; and another director in Richmond, who is at the head of a large fertilizer manufacturing business. Thus, a majority of members of the Board are men connected with industry. They have an intense sympathy with business and farming. A similar state of affairs exists with all of the Reserve banks. Such boards can never be dominated and can be controlled only in the manner and to the extent provided by law. It should not be necessary to make this statement.

The Federal Reserve Board has never attempted to exercise the least control over eligible loans made by Reserve banks. The Federal Reserve Act determines the classes of paper which may be discounted by Federal Reserve banks, and the Federal Reserve Board interprets the Act and defines in detail the paper which is eligible. The Board has the power, under the Federal Reserve Act, to review and determine the discount rates, which are first fixed by the Federal Reserve banks, and the two principles which govern the fixing of a rate are the accommodation of legitimate business and the conservation of the reserves.

The Board has the power, under the Act, to co-ordinate the working of the Federal Reserve banks into one System, which is one of the most important principles of the Reserve Act. And having the most intimate knowledge of banking conditions in the whole country, the advice and the suggestions of the Board exert an influence over all banking institutions in proportion to the dignity of that body and the respect and confidence in which it is universally held.

The Board has no control whatever over the loans which the member banks of the Federal Reserve System make to their customers, although it determines by rule, under the sanction of the law, the character of paper which is eligible for discount when presented by the member banks to the Federal Reserve banks for that purpose. The Board does not attempt to exercise any control over the discount powers of Federal Reserve banks, or member banks, other than has been specified.

The total loans and discounts of the member banks of the System, as previously stated, amount to $19,600,000,000. Of this sum the member banks are borrowing from the Federal Reserve banks only about $2,700,000,000. The Reserve banks are not in touch with the vast bulk of loans made by member banks to their customers.

In the matter of discrimination between essential and non-essential credits, the Board has publicly expressed the opinion more than once that such matters must be determined by the member banks in making their own loans to their customers. No general attempt has ever been made by Federal Reserve banks to discriminate between essential and non-essential industries to the exclusion of one and the acceptance of the other. All loans are made according to the circumstances of the case and their eligibility. The Federal Reserve Board has, according to its own announcement, deemed it its duty to exert its influence in the direction of curbing the expansion of credit used for speculative or non-essential purposes, without interfering with the maximum production along essential lines. As to determining between the essential and non-essential, however, the Board has left that to the banks of the country.

There has been to some extent a redistribution of bank credit within the past year, that is to say, loans made for speculative purposes have been greatly curtailed; and those who have been borrowing too heavily for any purpose may have been called on to pay a part of their loans, that others might enjoy the credit, because of the limitation of the credit supply. But all this has been done by member banks and not by Federal Reserve banks. Those who have been hurt by the redistribution have probably been the

complainers, and those who have wanted additional loans from banks, already borrowing excessively, which realized that they were borrowing too heavily and already had far more than their equitable share of the resources of the Reserve banks, undoubtedly have been complainers. But such complaints should not be permitted to obscure the situation. The volume of bank credit has not been contracted; it has been expanded—actually and relatively—beyond anything ever known in our commercial history, even in panic times.

It may be that state banks and the customers of state banks not in the System have complained of the lack of credit, having no central reservoir to which to go. Yet the member banks of this District borrowing heavily from the Reserve banks are lending $30,000,000 to state banks not members of the System. The banking system of the country can never be wholly satisfactory or develop the full power of the credit supply until the state banks come into the System.

Whatever the causes which are bringing about a readjustment of prices, and they are many, curtailment of the volume of bank credit is not one of them; there has been no curtailment but a continued expansion.

After the concentration of reserves, the mobilization of reserves is probably one of the most beneficial effects of the operation of the Federal Reserve System. Under the operation of the System, reserves not needed in one part of the District during a portion of the year can be concentrated in another part of the District, and when the occasion for their use is past, they are available for use in another quarter. It is perfectly manifest, however, that any one section of a Federal Reserve district is entitled to one of two things: either the constant use of its own equitable share of the total lending power of the Federal Reserve bank the year round; or a larger portion than its equitable share during a part of the year, and a correspondingly smaller portion than its equitable share during the remainder of the year. In other words, if a certain section of a Federal Reserve district requires the use of the reserves of another section at one season, it should be prepared to lend its own reserve to some other section during the remainder of the year.

The total reserve deposits of all South Carolina member banks amount to between three and four million dollars. Therefore, South Carolina's equitable portion of the lending power of the Federal Reserve Bank of Richmond is nine million dollars. Between June 30, 1919, and September 30, 1920, the loans to and rediscounts for South Carolina member banks have ranged between $24,200,000 at the beginning, $12,200,000 on January 1 and $23,300,000 on September 30, the average for the entire fifteen months being $18,200,000. The percentages have ranged between 266% and 135%, or an average of 202% for the entire period. From this it will be plainly evident that South Carolina has received more assistance than the remainder of the district.

In the severity of the present emergency, there will be every reasonable help extended which can be legally extended within the reserves available and as conditions justify, to aid in the orderly marketing of crops or goods. To advance reserve-bank funds for indefinite or unnecessarily prolonged periods, or until commodities reach a predetermined arbitrary price is not lawful, and it violates the vital principle of reserve banking—keeping reserves liquid, to aid different classes of borrowers applying from different sections at different times and seasons. It ought to be manifest that if Reserve banks engaged in such a practice, it would further tie up credit and tend to stagnate or paralyze other industries.

Davison's Textile Blue Book.

The publishers announce the completion of the "Thirty-third annual edition" July, 1920, which shows every mill report carefully revised. Eleven hundred and twenty-three new manufacturers have been added, while all mills out of business have been taken out. Thousands of changes in mill names, officers, goods made, equipment, selling agents, etc. have been made, and the various dealers and other allied lines have been brought up-to-date.

Besides the regular reports, a separate list of the new mills is shown, and this is useful in reaching new concerns. A list showing all mills with dye houses is a valuable feature for chemical and dyestuff firms. A classified directory of dyers and finishers has been added. The textile maps, showing all towns where there are textile plants or dye works, have been carefully revised. A new section reporting over 1,500 foreign cotton firms is added this year.

Two editions are issued as formerly; the office size, 1900 pages, with heavy cloth binding, is printed on fine plate paper with a large page and contains all the above features, while the "Handy Edition" of 1,700 pages has all features given in the office size, except the Classified Directory of Mills and Textile Supply Directory.

The volumes can be obtained from COTTON or from the publishers, Davison Publishing Co., 50 Union Square, New York. Prices delivered, Office Edition $7.50. Handy Edition $5.00, Salesmen's Directory $4.00.

"Electric Hoists" is the title of Catalog No. 380, a 96-page, illustrated booklet just issued by the Link-Belt Company. This covers the Link-Belt line of standardized monorail electric hoists as well as overhead electric traveling cranes in capacities of ½ to 3 tons inclusive. It completely describes these machines, giving tables of weights, clearance dimensions and speeds. The photographs showing machines in operation indicate that machine shops and factories of every description are fast coming to a greater realization of the need for installing labor-saving, cost-reducing, production-increasing equipment. Copies of this booklet may be secured by addressing an inquiry to the Link-Belt Company, or any of its branch offices.

One of the chief advantages of Dixon's graphite brushes is their lubricating properties which prevent wear on the commutator. Commutators on which these brushes are used often run for years without being turned down and remain smooth and true, it is stated. Also, because of their lubricating properties, these brushes prevent friction losses on the commutator and keep it automatically lubricated, it is said, rendering unnecessary the use of any applied lubrication. They are made to fit any type of brush holder and they may be copper-plated and equipped with pigtails.

Why Bleached Cotton Goods Turn Pink

BY WILLIAM B. NANSON.

Within the past year or two the writer has been consulted many times regarding the "pinking" of various kinds of bleached cotton goods; these include bleached knitted underwear, sheetings and shirtings, drills, white duck and even paper, and bleached canvas shoes. I have been asked to point out the probable cause and a practical way of avoiding its recurrance as well as the best method of restoring the "pinked" fabrics to their original clear white color.

In this article, which gives the result of my investigations and theories in regard to the matter, I shall confine myself more especially to the "pinking" of white canvas shoes, but the facts and theories which will be advanced are just as applicable to any other style of bleached cotton goods.

In all cases it was found that the goods had turned a bluish shade of pink, which showed decidedly darker in the hollows and seams (where the body of the cloth was thicker and presumably contained more moisture) than in the thinner, smoother and more exposed part of the shoe and it was also found that while moisture assisted, it was not indispensable to the development of a pink coloration.

When making canvas shoes it is customary to paste together the bleached shoe canvas and the unbleached drilling used as a backing or lining. This is done on a pasting machine before cutting up. The two cloths so pasted pass directly to revolving drying cylinders heated by steam which usually dry the double cloth more or less imperfectly under the more or less careless supervision of an operative who fails to realize the importance of getting these cloths thoroughly dry for in any case the starchy materials used in making the paste, and the chlorides which are usually combined with it as antiseptics are in possession of powerful hygroscopic qualities which are of themselves sufficient to extract the necessary moisture from the air to set up certain chemical reactions which might assist materially in developing a pink coloration.

In proof of this I have found that in certain parts of the goods, where creases or wrinkles in one of the layers of the cloth have occurred in such a manner that the two layers had failed to become pasted together, the bleached canvas did not turn pink at that particular point though on all sides of the unpasted spot right up to where the paste failed to adhere the cloth was pink enough. Owing to this phenomenom it has been thought by some that the paste itself or the grey drill lining was the cause of the "pinking" of the goods. I do not think so; though they may have acted as secondary agents to hasten and assist the chemical reactions which did cause it, they had nothing to do with its primal cause, for I have found that the bleached canvas, if kept in a dark moist place away from any air ventilation, would turn pink also if given time, and this without being pasted at all, but it took time and contributory and adventitious circumstances.

My opinion, based upon experiments, observation and actual experience, is that the pinkish color developed upon shoe canvas is caused primarily by the blueing material used in the finishing of the goods at the bleachery, and the safest and sanest way to avoid it is to cut the blueing out and finish the goods a dead white. Blueing canvas for shoes serves no good purpose and adds nothing whatever to the attractive appearance of the finished shoe, because the subsequent pasting and steaming which the goods receive preparatory to cutting up in the shoe factory oxidizes the blue largely into a ferric hydrate and a ferro-cyanide which changes its color into a dirty brownish yellow.

In the shoe making industry the most probable thing that will make for the development of a pink color on bleached canvas is the fumes of aniline and toluidine arising from the "tapsticker" used in putting on the soles of the shoes and, where rubber soles are used, from the soles themselves, but this has been found to happen only where the canvas has been blued with Prussian blue. Aniline fumes have been known to form brown stains upon unblued bleached goods, but never, so far as my knowledge goes, was a pink coloration developed except under conditions which were fully understood and which have no bearing upon the subject matter of this article.

Then the question at issue is—if aniline fumes are the cause of the "pinking" of white canvas shoes—(1) What is the cause of it? (2) How can it be avoided, (3) How can it be removed after pinking?

Nitro-Benzol or Oil of Myrbane.

When nitro-benzol (which always contains nitro-toluene) is reduced by iron in a fine state of division and in the presence of a dilute acid it becomes converted into aniline and toluidine. All the nitro compounds of benzene (benzol) on reduction with appropriate reagents such as iron, zinc or tin in the presence of an acid, yield amino compounds corresponding with the nitro compound reduced; such as aniline $C_6H_5NH_2$; the three diamino-benzenes or phenylenediamines $C_6H_4(NH_2)_2$, etc.

These amino compounds, by the action of nitrous acid or nitrites in the presence of an acid in excess, are converted into diazo compounds. These diazo compounds react with certain amino compounds or phenols giving rise to the almost innumerable series of coloring matters known as azo-dyes.

Toluene and xylene which are nearly always present in all anilines and benzenes generally react, under similar conditions, in the same way as benzene producing a similar series of compounds, all of which goes to show that, starting with nitro-benzene (oil of myrbane) there may be found a series of conditions which tend to form a pink coloration on bleached cotton provided it has been previously blued with a Prussian blue.

Nitro-benzol first made its appearance in the arts under the name of "essence de myrbane" or "oil of myrbane." It was used to scent soap and as a "bitter almond" flavoring. Its manufacture is interesting and is conducted about as follows: 500 gallons of pure benzene (made from coal tar) is run into a mixing tank and constantly agitated and an acid mixture composed of 5,000 pounds of nitric acid of specific gravity 1.43 and 6,600 pounds of sulphuric acid of 96 per cent thoroughly mixed is run in a thin stream into the benzene, while the agitators are kept revolving at a speed of 60 r. p. m. The temperature must be

kept below 60 degrees F. by checking the flow of the acid if the temperature rises. After a full charge of the mixed acids has been run into the machine the agitation is continued for about 4½ hours and the benzene will then be completely transformed into nitro-benzol. There are other details of washing and removing the excess acids, etc., which it is not necessary to discuss here.

Toluene.

Now when this nitro-benzol (or nitro-benzene) is to be sold as "oil of myrbane"—and I wish readers to especially note this—it is redistilled under a diminished pressure in order to obtain a perfectly clear and transparent liquid such as the trade demands and it is customary to use toluene imperfectly freed from benzene for this purpose, it being cheaper and yielding a somewhat more fragrant "myrbane" than benzene alone; the resulting product is of course a mixture of nitro-benzene and nitro-toluene.

Toluene, when oxidized by nitric acid as previously stated, and under favorable conditions, may be converted into benzoic acid and when a ferric salt such as is found upon goods blued with the Prussian blue of commerce is brought into chemical combination with benzoic acid, or a benzoate, a flesh colored precipitate of basic ferric benzoate, $(C_7H_5O_2)_2$ Fe, is formed. This precipitate is Fe $(OH)_2$ and it is to this fact that much of the pinking found upon bleached canvas shoes is due—but not all of it.

Toluidines.

Toluidines are prepared by the reduction of nitro-toluenes in the same way that aniline is obtained from nitro-benzol. The para, ortho, and meta-toluidines may be separated from each other by a variety of processes. The crude product consists of about 35 per cent para 63 per cent ortho—and 2 per cent meta-toluidine. The separation of aniline and toluidine, for both are found together in commercial products, is based partly on the different strengths of the bases and partly on the difference in the solubility of their acetyl compounds.

Para-toluidine may be detected in the presence of aniline and ortho-toluidine by adding a few drops of ferric chloride to a hydrochloric acid solution of the mixture. If the para compound is in excess a red solution is formed. If ortho-toluidine and aniline are present in excess a greenish blue precipitate is formed, which on filtration yields a red filtrate.

Ortho-toluidine is a colorless, thick refractive liquid with a characteristic odor. When dissolved in sulphuric acid it gives a blue coloration with chromic acid and this, on the addition of water, turns red violet. In alkaline solution it is oxidized with the production of an azo-toluene, oxalic acid and ammonia, while in acid solutions it gives rise to quinone derivatives. Printed on cotton fiber it can be oxidized into a red violet or flesh color by means of sodium chlorate and potassium ferro-cyanide.

Meta-toluidine is a colorless oil which is employed only to a very limited extent in dyeing. It behaves like the ortho compound on oxidation and it yields similar additional compounds with acids and metallic oxides such as ferric salts, etc., and it may be, therefore, so far as this article is concerned, considered the same as the ortho compound. Methyl-ortho-toluidine and its nitraso derivatives have been employed largely in the manufacture of the safranines and other pink and red colors.

Aniline for Red.

Ordinary fuchsin or magenta, or rosceine as it is sometimes called, is prepared by oxidizing a mixture of aniline with para-toluidine and ortho-toluidine. This mixture is generally known as aniline for red and was originally produced by the nitration and subsequent reduction of a certain fraction of crude benzene which consisted of benzene and toluene. At present most of the aniline for red is a mixture of pure aniline with crude toluene. By the latter I mean the mixture of ortho- and para-toluidine which is obtained by the nitration and subsequent reduction of pure toluene. Crude toluidine consists, as a rule, of 55 per cent of ortho-toluidine and 45 per cent of para-toluidine. The quantity of aniline added to this crude toluidine in order to produce the aniline for red varies according to the recipes of various manufacturers. As a rule about half the weight is used.

Theoretically, an oil containing equal molecules of the three bases would be required; but for practical work an excess of aniline and ortho-toluidine is used, because a part of these two compounds escapes the reaction, while the para-toluidine is entirely used up.

Many methods in the course of the past have been proposed for oxidizing this mixture into aniline red but only two have survived. They are known as the "arsenic acid melt" and the nitro-benzene process. From a practical point of view they are of equal value, but the arsenic acid melt is being abandoned on account of the poisonous nature of the arsenic compounds required and I shall not discuss it in this article because, in any case, the nitro-benzene process is the only process which interests us in this present discussion and which, as I shall show, has a direct bearing on the "pinking" of white canvas shoes.

In 1869 Coupier discovered his process for producing aniline red, or fuchsin, or magenta, as it is variously called, by the nitro-benzene process. It did not give very good results at first, but was gradually worked out by various firms until successful, and at this writing this nitro-benzene process has practically superseded the one with arsenic acid.

It was originally supposed that the nitro-benzene used in this process enters into the aniline so formed, after having served as an oxidizer. At present it is generally recognized that the nitro-benzene merely acts as an oxidizing agent and that, in so doing, it is transformed into tarry matters, which are useless and remain in the residues.

The process is worked with different proportions and in a different manner in different manufactories, but in all cases it is based upon the following facts: aniline and and nitro-benzene do not react upon each other; nor does any reaction take place if aniline chloride be added. But if a small quantity of iron chloride be present, a reaction sets in at a temperature of 160 degrees. If the aniline and aniline salt used are pure, a color of the indulin group is obtained which is blue, but if para-toludine and ortho-toluidine be present in the necessary proportions, and they invariably are in nitro-benzene, or oil of myrbane as it is usually called, the result is pink.

I have been somewhat technical and prolix and long-winded in discussing all these minute and somewhat dry chemical details because I wish the readers to see from all the various angles and viewpoints how it may be quite possible for mixtures of anilines and toluenes and the fumes from these compounds under favorable conditions—chemical and physical—to combine with the oxide of iron

and ferro-cyanide which are always present in Prussian blue and impart a pink or reddish color to bleached cotton goods which may have been blued with it in the finishing process.

Prussian Blue (Ferric-ferro-cyanide).

Cyanides are compounds of the radicle Cyanogen CN. The history of the cyanide industry begins with the discovery of Prussian blue by Diesbach in 1704. Prussian blue is a compound of iron and cyanogen.

When cold neutral solutions of one molecule of a ferric salt and one molecule of potassium ferro-cyanide are mixed together it will be found that a heavy precipitate of ordinary soluble Prussian blue is formed. The same compound is formed by mixing equal molecular quantities of a ferrous salt and potassium ferricyanide.

When a cold solution of potassium ferro-cyanide is added gradually to a cold neutral solution containing an excess of a ferric or of a ferrous salt, or when a soluble Prussian blue is digested with a solution of a ferric chloride, precipitates are formed which, after a prolonged exposure to air involved in washing them completely, are identical in composition and properties. The substance when dried is normal ferric ferro-cyanide usually referred to as Prussian blue. Turnbull's blue, obtained by precipitating a solution of ferric cyanide of potassium with an excess of a ferrous salt, is identical with ordinary Prussian blue.

Both the soluble and insoluble Prussian blue, just described, are ferric ferro-cyanides and not ferrous ferricyanides. This is proved by the fact that they can be made by the action of hydrogen peroxide on a solution containing a ferric salt and potassium ferricyanide in suitable quantities; hydrogen peroxide reduces ferricyanide to ferrocyanide, but has no action on a ferric salt, so that ferrous ferricyanide could not be produced by this reaction.

Commercial Prussian blues as sold are not quite identical with those just described but are mostly obtained by the oxidation of ferrous ferro-cyanides. One class is made by adding a cold neutral solution of one molecule of a ferrus salt to a solution of one molecule of potassium ferro-cyanide, and then oxidizing the white precipitate by means of atmospheric oxygen, which is greedily absorbed. This blue is known as Hoffman's blue and is insoluble in oxalic acid. Another is to proceed as in the method given except that the solutions contain one per cent of sulphuric acid and a white precipitate is obtained which is much more difficult to oxidize than in the other case and possesses rather different properties. Like ordinary soluble Prussian blue it is soluble in water and oxalic acid but it differs from it in being much more stable to ammonia solution and other alkaline influences. This is the blue usually found in a liquid state in commerce and is usually referred to as "stable soluble blue" and is the blue mostly used.

It will be of the first interest for us to know that precipitation from hot acid solutions always tend to produce blues of a more stable type and also that the blue iron cyanogen compounds contain both ferric and ferrous iron. This is important to remember as will be seen later. The compounds which contain only ferrous or only ferric iron are colorless, or—at least as compared with the fully developed blue—only feebly colored.

Potassium, sodium, and calcium hydroxides, and ammonia, and *heat coupled with moisture* decompose Prussian blue into ferric hydroxide and a ferro-cyanide. Alkali carbonates act in the same way but more slowly. Goods blued with Prussian blue lose their color in the sunlight but regain it largely in the dark.

The liquid Prussian blues of commerce are usually mixtures of the compounds already described, the best blues are obtained by precipitating a ferrous salt with yellow prussiate and then oxidizing the precipitate. The finest quality is made about as follows: 50 kilos of yellow prussiate (ferro-cyanide of potassium) are dissolved in 250 kilos of boiling water; 42.5 to 45 kilos of green vitriol (copperas) are dissolved in about the same quantity of water in the presence of some strips of hoop iron, or some kind of scrap iron, this is necessary to keep the copperas in the condition of a protosalt so as to prevent the formation of a ferric salt. The clear solutions are then run simultaneously into 250 kilos of clear water. The almost white precipitate is allowed to settle and then drained and filtered through a cloth filter. It is then transferred to a wooden tub and treated with 25.5 kilos nitric acid (specific gravity 1.23) and 18 kilos of sulphuric acid (1.84 specific gravity). Sometimes red fumes are evolved only after some hours, but if the copperas is in excess they are usually evolved at once and this gives the best color. After standing for 24 hours the mixture is suspended in a large quantity of cold water, and allowed to settle. The supernatant water is then decanted off and the Prussian blue paste must be washed in several waters until the blue is free of acid.

Usually, however, the heated paste is treated with ferric chloride in the place of the nitric acid and sometimes the blue paste is acidified with hydrochloric acid and then chlorine gas is passed through it; this last is the cheapest method and therefore the one mostly used, no doubt, but, in any case, the result is the same, the solution or paste being oxidized from a ferrous into a ferric condition and the blue is developed.

Canvas Shoes.

In the manufacture of canvas shoes both nitro-benzol and nitro-toluene are used under the name of "oil of myrbane." This is used as a solvent for a rubberized cement called in shoe trade parlance "tapsticker," composed largely of balata or gutta percha. Also many of the so-called rubber soles used on canvas shoes contain more or less benzol and toluene and aniline or their derivatives, and it is to this nitro-benzol, and nitro-toluene and aniline in conjunction with the iron in the Prussian blue that we must look for the pinking of the white canvas used in the making of the shoes. When I was first consulted regarding the probable cause of the "pinking" of bleached cottons I diagnosed the case, without hesitation, as being due to the blueing, but I could not explain the cause of the change, but after a careful study of all the chemical and physical aspects of the case I have been able to arrive at the following definite conclusions:

In the case of canvas shoes, the pasting together and subsequent hot drying of the goods decomposes the blue into ferric-hydrate and ferro-cyanide in which some ferrous salt is doubtless found. Subsequently the nitro-benzol and nitro-toluene fumes from the "tapsticker" become combined with and reduced by the iron salts of the decomposed blue into aniline and toluidine and this mixture

in its turn is oxidized into aniline red by further and excess fumes of nitro-benzol. It may not be easy to indicate in just what exact order or manner all these reactions take place but we have all the constituents to hand to accomplish this result—nitro-benzene, nitro-toluene, aniline, toluidine, chloride of iron and a ferrous and ferric ferro-cyanide.

In other instances where white drills or sheetings or other goods have been "pinked" in store rooms or finishing rooms in bleacheries or elsewhere, sometimes in the cases in transit, I have found that in every instance the goods have been blued, and have been in some way subjected to the fumes of benzene, aniline and toluene or some of their derivatives.

In order to prevent this pinking a blueing material should be used that contains no iron, or in the case of shoe canvas a solvent for the "tapsticker" should be found containing no aniline, or toluidine, or their parents, constituents or derivatives.

Tetrachloride of carbon might do, but it is unhealthy for the workers to use, and I won't recommend it. The safest and most feasible plan is for the shoe trade to use their white canvas in an unblued condition for where this plan has been followed there has been no pink shoes. It has been shown in the forepart of this article that the blueing of shoe canvas is wholly unnecessary and conduces in no way to the good appearance of the finished shoes.

The pinking of finished bleached cotton goods, other than white shoes, in store or in transit, is of rare occurrence though I have seen a lot of knitted underwear opened in San Francisco which was decidedly pink. I have also heard of white shirtings in a bleachery finishing room which were "pinked" by the fumes of aniline and toluidine rising through an elevator shaft from a dyehouse on the floors below. In all of these cases the only recourse is to subject the "pinked" goods to the fumes of ammonia which reduces the pink color into a colorless condition. This may best be accomplished by covering the goods for a time with a sheet dampened with liquid ammonia. This usually restores the goods to their original white but it is never permanent.

In the case of pink shoes, however, this will hardly answer, the pink being more permanently established and the goods (i. e. shoes) being kept in the dark, and more or less excluded from the air in boxes, for it must be remembered that the action of the ammonia is merely a reducing action. It does not destroy the pink color, it merely reduces it to a colorless condition and the pink color once developed will return again when the action of the ammonia ceases and the oxygen and carbonic acid of the air neutralizes it; exposure to the light, however, will largely remedy this and help to make the decolorization of the pink more permanent as in the case of goods exposed for sale openly in the daylight.

As regards the decolorization of pink shoes I have heard it advised to brush the shoes with ammonia water, or, to brush them over with a bisulphite of soda solution. Either of these methods will decolorize the pink it is true but both are reduction methods and the pink color will come back in time, moreover, the bisulphite of soda will make the shoes have a dirty greyish yellow color.

To destroy the pink color effectively and for all time it must be oxidized out of existence and not reduced, and this can best be accomplished by brushing the pink canvas shoes over with a solution of hypochlorite of soda, and letting it dry, this solution contains a permanent alkali which will effectively prevent the return of the pink discoloration after the hypochlorite has once destroyed it for aniline red or pink can only be developed in the presence of an acid.

The Seven Wrong Things.

Haven't you ever been coming down Main Street,
And seen a crowd at the corner,
And asked somebody what was the meeting about,
And had him say: "There's a guy had a fit"?
And then
In your perfectly natural curiosity to see this guy,
And what he looked like in a fit,
Probably you joined the crowd
With a good deal of force,
So that you got about halfway in the center,
And then you still couldn't see the guy,
And you got mad at your neighbors because they wanted to see too,
And you pushed some more
And by and by you got in the center.
And it was kind of disappointing,
Because the guy lay perfectly still,
And wasn't frothing at the mouth or anything.
But he looked sick and you said angrily:
"Ain't anybody going to do anything for him?"
Although there were six people doing six different things for him already.
And then perhaps you tried to do something too—
Lift up his head or something—
Because you thought you ought to.
But the six others objected.
And you got in a row,
And had words.
And then the doctor came.
And he said all seven of you were wrong and the right thing was something none of you had thought of and you'd probably made him a lot worse than if you left him alone.
And after you got home you began to wonder
Why you hadn't thought of that eighth thing that was right,
Instead of one of the seven that was wrong.
And you thought how important you'd have felt if you'd really known what to do.
And how you'd have probably saved his life,
And been mentioned in the newspaper.
So you went to the phone
And called up the Red Cross
And asked for information about First Aid courses.
And when they said they had a class started and the first meeting was Monday night
You said: "I'll be there."
And you went.
And got the right dope on what to do in accidents.
And now when a guy has a fit,
Or a bruise or a burn or a broken arm or a sunstroke,
You know what to do.

If you have done something good, forget it and do something better.

Southern Textile Association Meeting

As the Show Week drew to a close, the Southern Textile Association held its 17th semi-annual convention at Greenville coincident with the Exposition. This convention was, beyond a doubt, the biggest drawing card outside of the Exposition itself and its occurrence brought to Greenville many mill men who were enabled to attend both the association meetings on Friday and Saturday and also the Exposition. The meetings were held in the Grand Opera House and were attended by a surprising number of members.

The first session was brought to order Friday morning at 10 o'clock, with a representative attendance of mill men from all sections of the territory covered by the

association. In his official capacity as president of the Southern Textile Exposition, William G. Sirrine, who called the meeting to order, expressed to the members of the association the thanks of the Exposition Company for the inspiration arising from the associational body which had so greatly aided in the rapid development of the Southern Textile Exposition. He assured his hearers that the Exposition Company greatly appreciated the individual and associational cooperation of the Southern Textile Association and expressed as his opinion that with such cooperation coming as it does from all sides, that the subsequent Expositions will be much more improved and provide a greater means for the promotion of the southern textile industry. Mr. Sirrine then voiced his thanks to the textile press for the cooperation and assistance received from that source.

Mr. Sirrine then introduced Marshall Prevost, mayor pro-tem of Greenville, who, in the absence of the mayor, made a short talk in which he welcomed the mill men to Greenville.

At this juncture the chairman turned the meeting over to Harry H. Boyd, president of the Southern Textile Association, who introduced T. W. Mullen, superintendent of the Rosemary Manufacturing Company, Roanoke Rapids, N. C., who responded to the address of welcome. In his response Mr. Mullen pointed out that in view of the splendid hospitality accorded visitors to Greenville on previous occasions as well as during the week this year, and as the city had been decided upon as the place for the splendid Textile Hall as well as a large number of industrial plants, it was obvious that Greenville is a city of activity and progress. He congratulated the Exposition Company upon the Show of this year and also the various

organizations of the city who did so much toward the making of a successful and pleasurable visit on the part of the mill men.

President Boyd then announced that inasmuch as this was only the semi-annual meeting of the association, there would be no president's address as was stated in the program. He then presented F. Gordon Cobb, superintendent of the Lancaster (S. C.) Cotton Mills and chairman of the Sectional Committee of the association. Mr. Cobb stated that the regular technical papers on carding, spinning, weaving and power subjects would not be given at this meeting but would be carried over to the annual meeting of the association. He continued with a brief resume of the questionnaire system which was inaugurated at the Wrightsville Beach meeting of the association several years ago, giving actual instances in which this plan had been of valuable assistance to mills. He brought out the point that the reports of the different chairmen under the questionnaire plan were not the personal ideas of the one man himself, but the compiled opinion of many men expert in each particular line, that they were something that could be relied upon as being as nearly correct solutions to the different problems as could be secured. Mr. Cobb then appealed for the cooperation of the association members in the gathering of material for these reports and asked for their earnest and serious thought when preparing answers to the questions submitted to them under the questionnaire plan. He stated that the thing that was desired was to get actual tests and bona-fide information on the different topics, secured as a result of the tests suggested in the questionnaire, and not merely the personal opinion of the man filling out the answer. When the full cooperation of the mill men is secured in this work, said Mr. Cobb, then will the chairmen of the committees be enabled to render a really valuable service to the association through accurate reports, and when earnest thought and study is applied to the questionnaires, the South will go still further upward as leaders of the textile industry.

In closing, Mr. Cobb emphasized the fact that neither the name of the mill man answering the questionnaires, nor the name of the firm with which he is connected is requested or even desired by the committee chairmen.

The report of the Southern Textile Foundation Committee, by David Clark, the chairman, was the next on the program. Mr. Clark gave a brief history of the Foundation, which started at the spring meeting of the association at Spartanburg when a committee consisting of David Clark, Marshall Dilling, F. G. Cobb, W. M. Sherard and C. W. Causey was appointed to plan the Textile Foundation. The chairman reported that the committee had sent out letters to southern mills, bespeaking their aid in the establishment of the Foundation. The yearly assessment is to be $3 per 1,000 spindles, it was stated. Quite a number of responses to the letters have been received. One of these was from Lockwood, Greene & Company, who, having started a research development of a similar character for their own mills, realize the value of such a movement to the industry.

The object of the Southern Textile Foundation is to have a research bureau, under the direction of a capable man, with the assistance of two or three others, who will take up the problems arising in the mills of the members and make tests in the mills, striving toward a solution of the problems. This work should prove of especial value to the young mill man by helping him to get his problems straightened out by men of ability and experience under the sanction of the Foundation.

Following this report, J. D. Buice, of Pineville, N. C., chairman of the cotton committee of the association, read an interesting paper on the subject of cotton. He was followed by P. H. Partridge, of Charlotte, who discussed cotton grading from the seller's point of view. John W. Clark, of West Durham, N. C., then read a paper on the various phases of the finishing of cotton goods.

The resolutions committee, composed of W. M. Sherard, W. P. Hamrick and F. Gordon Cobb, was then appointed by President Boyd.

After the morning meeting, the members of the association were conveyed in automobiles to the Sans Souci Country Club, a delightful spot just out of the city. Here they were again accorded another portion of Greenville cordiality and hospitality, in the form of a delectable buffet lunch with desert and plenty of punch served by charming Greenville ladies. Moore's concert band furnished music for the occasion, while the strains of pleasing music by a men's chorus were wafted over the verandas to the ears of the diners. Afterward, the diversion of watching an airplane do stunts was enjoyed and not a few of the guests took on a round of golf through the courtesy of the Country Club whose links were turned over to the Exposition and association visitors throughout the entire week.

The Dutch Supper.

One delightful occurrence of the week took place on Friday evening, in the K. of C. Hall contiguous to the Exposition Building, when about 200 mill men, machinery manufacturers and others gathered at that place for a Dutch supper. The affair started with a solo by Johnny Walker and then those present started in on the "chow." During the repast they were entertained with further musical selections in the form of a quartet in which George Cocker, of Gastonia, was implicated, as was Willis Timmons, secretary of the Greenville Chamber of Commerce. Mr. Neilson, who sells Minter homes, officiated at the piano and handled the ivories in a pleasing manner. McHardy Mauldin was the master of ceremonies on the musical end of the entertainment.

After the musical selections the past presidents in attendance and the incumbent president of the Southern Textile Association were introduced and appropriate musical ditties were sung as each arose from his chair. Those who were thus introduced were H. H. Boyd, W. M. Sherard, Frank Heymer, F. Gordon Cobb, A. M. Dixon and others. Then every superintendent present was called upon to stand and introduce himself

After these formalities, a monologist, whom Edwin Howard introduced, gave some recitations which were well received. Then came another vocal number by an improvised quartet. The piano didn't accompany this one though, for Neilson was in the quartet.

Gordon Cobb then introduced A. B. Carter as a manufacturer's agent who had recently taken on a new line which he asked him to explain to those assembled, in the meantime handing him a large piece of ice. The genial "A. B." tried to pick out the warm spots on his "new line" while he made his response, much to the amusement of his auditors.

Then Arthur Dixon was called upon to make a speech. This he did; in fact, he made several speeches all in one,

bringing home with each bit of humor a piece of philosophy which stuck in the minds of his hearers long after the jokes were forgotten. Next, those present heard short talks from W. M. Sherard, F. Gordon Cobb and Norman Pease on the opinions of these men as to conditions. Each was optimistic in his expressions.

The Second Session.

The second session of the association, called to order at 10:30 o'clock Saturday morning by President Boyd, was attended by an even greater number of members than was present at the meeting on Friday.

After calling the meeting to order, the president announced that A. B. Carter would introduce the first speaker on the program, Governor Robert A. Cooper of South Carolina. This Mr. Carter did with a graceful speech which he concluded by presenting the state executive to the association as a man who "stands for the right and condemns the wrong."

PRESIDENT H. H. BOYD.

Governor Cooper made a very impressive speech which was tinted with a vein of optimism throughout. He stated that in the midst of wonderful mechanical development, we must bear in mind that the human being is the important factor in industry. Machinery has added greatly to the happiness of the human race, but an occupation is a failure unless it tends to the increased happiness of the worker. The ultimate goal must be the common weal. In every human breast there is a desire for individuality, and the modern tendency to regard the mass, rather than the individual must be gotten away from, and the management of industry must do all possible toward the enthronement of the individual. Labor must be interested in its work and the product it is making, for the man who toils for pay alone is without the proper vision, lacks the moral courage. To remember always the human side and to treat human beings as such was the admonition given by the speaker to his hearers.

There has been relatively little labor trouble in the South, the governor continued, and the interest manifested in the employees by the employers is a great factor in the South's industrial growth and its immunity from the onslaughts of Bolshevism.

The textile industry is directly dependent upon the farmer, the speaker pointed out, and it is to the best interest of the men in that industry to help the farmer. Governor Cooper further stated that the farmer must get a legitimate profit on what he produces, else his distress will affect the textile industry. In our civilization there is no such thing as isolation—we are all dependent upon one another. No one individual industry can stand alone. We must see the picture as a whole.

Taking up the present depression, the speaker said that every war had brought on a reaction and expressed it as his opinion that today's trouble is purely psychological rather than real. There have been far worse times than now, he pointed out, and we can at least be cheerful and courageous. The governor believed that the greatest economic asset now is a smile on every man's face. "Be of good cheer," he said, "and face the issue like men. A right mental attitude is essential now. Every man must put forth honest effort."

"I believe that a new period of great prosperity is just ahead of us—the darkest hour is just before the dawn," declared the Governor in conclusion. "Bear the burden like men. Many men have faced far worse conditions and successfully overcome them. Put on a smile that won't come off. I remember seeing our young men march off for the battle front with smiles on their faces. Shall we take off our smiles now, when our young men faced death with a smile?"

SECRETARY A. B. CARTER.

At the conclusion of Governor Cooper's address, which was warmly applauded, President Boyd presented Rogers W. Davis, southern agent for the Saco-Lowell Shops, who discussed the subject "The Human Element of a Cotton Mill" from the viewpoint of a machinery man and prominent Rotarian. This is reproduced upon another page.

Following Mr. Davis' speech, President Boyd called upon that grand old man in the southern textile industry, Captain Ellison A. Smyth, of Greenville, to address the convention. Captain Smyth said that five years ago the association had paid him one of the greatest compliments he had ever received in electing him as an honorary life member. He said he has watched with pleasure the growth of the association and that its increasing usefulness was

very gratifying. He believed it was doing a wonderful work, the interchange of ideas being of value to all. He said the association deserves the assistance and support of all connected with the industry and that he wished for it continued success in its good work. Captain Smyth received much applause from his hearers.

At this point, Secretary Carter announced the resignation of Carl P. Thompson as chairman of the board of governors of the association because of failing health and the convention went into business session to elect his successor. James A. Greer placed the name of John S. Bachman of Rome, Ga., in nomination for this position and Mr. Bachman was unanimously elected to the position.

In an eloquent address portraying the advantages of Atlanta as a convention city, James A. Greer then moved that the association select that city as its next place of meeting. Atlanta was then unanimously chosen as the city for the spring 1921 convention. The time will be announced later by the board of governors.

The report of the resolutions committee was then tendered. This report, adopted by the convention, pledged the support of the association to the farmers in their effort to get a better price for their cotton and pledged the best efforts of the association to assist the mill executives in meeting the unusual and serious conditions that confront the textile industry today, The resolutions also favored the work of the textile foundation and the work of securing information through questionnaires. The thanks of the body were expressed for the hospitality shown to the visitors by the citizens of Greenville.

Fourth Southern Textile Exposition

"The best ever!"

That expression can perhaps convey better than could any prolix discourse, the general consensus of opinion of the exhibitors, delegates and visitors concerning the Fourth Southern Textile Exposition and its concurrent features which held sway in Greenville during the week of October 18-23. Everybody was satisfied. Even the weather man cooperated, supplying an unusually generous portion of splendid convention weather throughout the week.

The Exposition was formally opened at 10 o'clock on Monday morning, October 18, by President William G. Sirrine. The welcome address was made by Capt. J. J. McSwain who made a genuine welcome talk in which he made his hearers feel at home immediately. Edwin H. Marble, chairman of the exhibitors' committee, and special delegate from the National Association of Cotton Manufacturers, responded to the welcoming address in a well worded, brief talk in which he outlined the history of the textile industry.

The most outstanding feature of the entire Show, perhaps, was the manner in which the affair was conducted. Everything necessary was provided and every minute detail, it seemed, had been attended to by the Exposition management. Too much praise cannot be given to President Sirrine and General Manager F. M. Burnett for the splendid way in which the Fourth Show was handled. And that the labors of these men, and those of the organization around them, were appreciated was indicated by the words of congratulation and praise which came from all sides, from everyone connected with the Exposition. Uniformity in the decorative scheme, in the signs and a general systematic organization went far toward making the Fourth Show the success that it was. Practically every exhibit in the building was in readiness even before the time of opening and remained intact until the Exposition came to a close on Saturday evening.

Another predominant factor of the occasion was the general feeling of optimism which prevailed among the exhibitors, and every one was at his best in exhibiting and demonstrating his particular product. Anyone who entered Textile Hall with the feeling that the prevalent depression was to continue and that the textile industry and the country as a whole were certain to undergo an inevitable panic, had but to mix and mingle with those in the Hall to come away with a much more hopeful view of the situation.

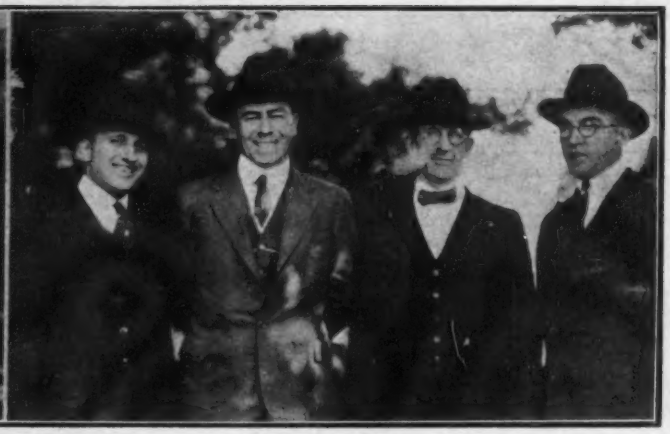
At this year's Show there was appointed what is to be known as an Exhibitors' Committee. This committee was organized to receive suggestions and criticisms concerning anything pertaining to the Exposition and to promote the mutual interests of the Exposition Company and the exhibitors. This committee met with the Exposition officials twice during Show Week and untangled several problems regarding the exhibits. For one thing, the transportation question has been straightened out and an arrangement made whereby the exhibitors will have a minimum of trouble in getting their exhibits to and from the Exposition Building. This committee also arranged for the very attractive badges giving the name and title of the exhibitors. Questions of arrangement of space, aisles, etc., the assignments of exhibit quarters, etc., were also taken up by this committee. This committee includes a number of representative exhibitors, being composed of Edwin H. Marble, chairman, of Curtis & Marble Machine Co., George O. is Draper, Hopedale Manufacturing Company; W. R. Catheart, Corn Products Refining Co.; James L. Nieukirk, Rogers Fibre Co.; and Walter W. Gayle, Saco-Lowell Shops. Other important matters are under consideration by this committee, relative to the Fifth Exposition.

Greenville, as an exponent of genuine southern hospitality, deserves much credit. The Housing Committee, particularly, played a great part in the making of a successful week. Greenville's finest homes were thrown open unreservedly to those visitors who were placed by the Housing Committee. Scores of these visitors expressed themselves in words of high praise for the manner in which they were entertained and lodged in these private homes. Mrs. William G. Sirrine, with a corps of able assistants, handled the housing work in a most admirable manner. The Greenville hotels are also to be congratulated upon the way they took care of their patronage during the week.

On Thursday evening the visitors were the guests of the Greater Greenville Association to the festival pageant "The Festival of the Harvest Moon" staged by patients, nurses and workers at Camp Sevier. The visitors were conveyed to the camp in automobiles furnished by the citizens of Greenville.

Every evening of the week there was conducted in Cleveland Hall a dance from 10 to 12 o'clock. The music for these occasions was furnished by the Garber-Davis Orchestra of five pieces, imported from Washington.

AN OUTSIDE EXHIBIT.



THE DETROIT GRAPHITE BUNCH.

which also gave concerts at Textile Hall every afternoon and evening. Some jazz orchestra, that was!

Many visitors took advantage of the courtesies of the Sans Souci Country Club in extending the privileges of the club house and golf links to the exhibitors and Southern Textile Association members. It was here that the Exposition Golf Tournament, in which J. E. Sirrine made low score, was held.

At the luncheon held on Tuesday by the Greenville Rotary Club, with visiting Rotarians, the members of the South Carolina Manufacturers' Association and others as their guests, Chas. A. Peple, deputy governor of the Federal Reserve Bank of Richmond, delivered an instructive address in which he defended the Federal Reserve system of banking, stating that there has been a continuous expansion not only of commercial loans among the banks, but also of loans for agricultural purposes. Mr. Peple, representing Governor George J. Seay of the Federal Reserve Bank of Richmond, quoted freely from a statement recently prepared by Governor Seay answering vigorously and in detail current criticisms. This statement is being utilized in part upon another page.

A feature of Thursday's program was a luncheon given at the Imperial Hotel by the Traveling Salesmen and Booster Bureau of the Greenville Chamber of Commerce, of which B. H. Peace is president. John W. Arrington, president of the Chamber of Commerce, acted as toastmaster. The features of this luncheon, at which 20 states were represented by representative exhibitors, were talks by Dr. L. J. Matos, of the National Aniline and Chemical Company, New York City, and by C. C. Nieh, president of the Chinese Chamber of Commerce, who was in Greenville with two associates looking over the Show.

Dr. Matos explained at the outset of his talk how and why dyes form one of the essentials to the making of a complete textile industry. He told of how the supplies of this kind from the old world were broken off when the war started in 1914, and of the great task which faced the chemists of this country on that account. The dyestuff men of America, he stated, overcame many obstacles and many setbacks in the work of furnishing the needed dyes, and now the American dyemakers are furnishing almost the total number of dyes imported before the war. Dr. Matos was on his first trip to Greenville and the South and stated that he had at last found that indescribable thing of which he had heard so much—southern hospitality.

Mr. Nieh spoke generally of the Chinese cotton industry and its developments and expressed his gratitude to the people of Greenville, the Exposition management and the exhibitors for their many kindnesses and attention. He complimented the Exposition and praised the warm-heartedness of the country. Over 1,800 Chinese are now students in this country, he said, and many more have completed their studies and returned to their native land. These students and the people of China have a very friendly feeling for the United States, and a feeling of gratefulness, and are not unmindful of the friendly feeling which America holds for China, asserted Mr. Nieh.

Additional Exhibits.

The Shambow Shuttle Company, of Woonsocket, R. I., had an exhibit in connection with the Diamond State Fibre Co., which attracted a great deal of attention. They had on display a number of their re-inforced fiber shuttles, for which is claimed a life twice that of the wood shuttle, in addition to eliminating trouble caused by splintered shuttles. In the manufacture of this fiber shuttle, a specially prepared, hard vulcanized fiber is attached to the wooden base of the shuttle. This fiber gives to the shuttle wear resisting qualities and a uniformity which is retained for a surprising period of time. As fiber is much more impervious to oils than wood, the fiber shuttle will not absorb oils and greases and it is further claimed is not affected by the humidity of the weave room as is the wood shuttle, thus insuring a light pick.

"It certainly looks good to me" was the opinion expressed of this shuttle by D. C. Dunn, of the Stafford Company, who had it in operation in their running exhibit throughout the week; this was Stafford's first experience with the shuttle, and they were very much pleased with it, as at no time during the week's run did it get hot. This fiber shuttle was also in operation on the Mason-Crompton looms at the Show, producing good results. A. W. Angell, sales manager of the Shambow Shuttle Company, was at the Show throughout the week showing the shuttle to many groups of interested mill men who came around to examine it, and he stated that quite a few orders were received from different mills when the men saw what the shuttle was and were convinced that it would make for increased production, better woven cloth, fewer shuttles "smashes" and seconds, and more contented weavers because of smoother running looms and bigger production and better cloth. This company guarantees that the glue joint of this fiber re-inforced shut-

tle will not fail under normal running conditions and offers to replace any on which this occurs through defective workmanship.

When a visitor wanted to get away from the machinery on the first floor, and wanted to spend a quiet, restful and profitable half hour or so, he betook himself to the cozy nook just a few steps up from the balcony, where he found the displays of the E. I. du Pont de Nemours & Company, the National Aniline & Chemical Company, the Judson Mills of Greenville, the Roessler & Hasslacher Chemical Company and the Yadkin Finishing Company of Lexington, N. C. The arrangement and grouping of these displays together made an alluring combination for the visitor.

The du Pont Company had a practical demonstration showing graphic formulas to illustrate the relation existing between dyestuffs and the explosive industry and to show that coal tar products by different treatments can be used for dyestuffs, explosives, medicines and poisonous gases. They had all the chemicals pictured with colored balls representing the atoms that make the different molecules. This exhibit showed the educational side and emphasized the importance of an American dye industry. The booth was a replica of a Pompeian room and was lined with beautifully decorated Beaver board. Those in attendance included Dr. R. E. Rose and Mrs. Rose, Mr. Bishop and Mr. Taylor, from the Wilmington office, and John L. Dabbs, H. B. Constable and J. D. Sandridge from the Charlotte office.

Another interesting exhibit in this group was that of the Judson Mills of Greenville. They were showing striped and silk plaid voiles which they manufacture This mill is the only one in the South to have a silk processing department. They take the raw silk and turn it out through a complete silk department and use it for making their silk striped goods. Brown Mahon, vice-president of the mills, and J. W. Stribling, of the silk department, were on hand at this exhibit and were kept busy explaining the silk striped products they had on display.

The National Aniline & Chemical Company, 21 Burling Slip, New York City, had a very excellent exhibit in this mezzanine group. They had on display a large coal tar tree or chart, which showed graphically the numerous substances that are obtained from coal and to which were attached nearly two hundred specimens of substances that have been made useful for different purposes, including paints, lubricants, medicines, perfumes, dyes of all hues, explosives and saccharine. This exhibit also included quite an extensive display of samples of National colors. Also a large number of mill products, ginghams, hosiery, etc., upon which these colors had been used, which was not only in the space of the exhibitor, but also arranged on the wall opposite this space. Dr. Louis J. Matos, from the New York office, Frank W. Gainey, from the Buffalo plant, W. L. Willard, of the Charlotte office, and others were present at this interesting exhibit.

The Roessler & Hasslacher Company was represented by T. D. Ainslee, bleaching expert from the Perth Amboy bleaching station and several others. These men were shownig the advantages of the peroxide method of bleaching.

The Yadkin Finishing Company, the other exhibitor in this pleasing group, were showing a line of fabrics finished by them and had ample representation in attendance.

A Simplex motion picture projector was on display under the direction of D. B. Shepard, projection engineer. The type of machine on display is the one which is being recommended for cotton mill community use. It is manufactured by the Precision Machine Company of New York and is distributed by Harry K. Lucas, Lucas Theatre Supply Company of Atlanta.

Zavon Co., Inc., were demonstrating their product, "Zavon," a textile solvent which is proving of material aid to the industry. In the dyeing, it gives a better luster and finer finish, as it also does in the knitting line, particularly in sulphur blacks. It gives a better appearance to dyed goods, producing an evener and softer finish. It is said that it eliminates "hungry spots" from goods, penetrating the cloth before dyeing and removing oil stains from knitted goods; first, in the kier and second in the standing bath. It has also been found useful in the degumming of silk and economical in the scouring of wool, removing animal oils from the wool. This company had on display hosiery on which "Zavon" had been used. They also had a demonstration showing the penetrability of this solvent on raw cotton. This feature, which elicited considerable attention from finishers and other visitors, consisted of two containers in one of which was placed Zavon and in the other fresh water. A ball of raw cotton was placed on each of the liquids. The cotton placed on the solvent went below the surface in less than 30 seconds showing how quickly "Zavon" saturated the staple, while the cotton placed on fresh water remained on top. George A. Reeder, vice-president and active head of the company, was at this exhibit as was John Stokes from the factory of the company.

The "Eclipse" automatic stop motion for cotton ring spinning frames, on exhibit in the booth of the Eclipse Machine Company, Elmira, N. Y., its manufacturers, drew forth much interest and comment. This article is made to stop a broken end of roving on a spinning frame before it reaches the top rolls. An automatic separator is attached to the roll cap bar back of the draft rolls between the roving and the rollers. When an end breaks, the separator automatically drops, preventing further draft of yarn through the rollers. It is claimed that a spinner can handle more ends with the aid of this stop motion, the company's assertion being that 40 per cent more ends can be operated by a spinner through the use of this apparatus. It also is stated that this eliminates 90 per cent of lap waste on the rolls, thus increasing the productive capacity of a frame and also saving wear on the leather rolls. This saving on the rolls is estimated at 95 per cent. J. C. Ferguson, general manager of the company, and J. P. Garey, engineer, were present at this exhibit explaining the stop motion to visitors.

The Deford Company, Baltimore, Md., were showing a line of strapping including the well known Deford check strap. T. L. Chapman, from the Boston office of the company, was the jovial attendant at this booth.

Mill and cottage paints, varnishes and brushes were made a specialty at the exhibit of the Patton Paint Company, of Newark and Milwaukee, who manufacture "Sun Proof" paints and other products. In attendance from this company were M. C. Hall and C. C. Brooks. From the Pittsburg Plate Glass Company were J. E. Thomas and H. C. Groves. J. E. Oliver, of the Baltimore office, was also present during the week.

Away back in one corner of the balcony was the booth of the Charleston Industrial Corporation, advertising the City of Nitro, W. Va. This is a city which the government used during the war and is now being disposed of by the Charleston concern. Our allusion to its location in the hall

Barrett Specification Roofs

Bonded for 20 and 10 Years

Nashville Believes in Bonded Roofs—

NASHVILLE, Tennessee, "The Athens of the South"—the birthplace of Andrew Jackson and the home of James K. Polk—is imbued with the spirit of progress, and is a leader in building construction and civic advance.

And most of the city's prominent new buildings—a few of which are pictured—are covered with Barrett Specification Roofs. For the property-owners and architects of Nashville, like those in all other thriving American cities, are strong believers in these famous roofs backed with a Surety Bond.

The Surety Bond Guarantee

The Barrett Company is the only Company that has enough confidence in its roof to put back of it a Surety Bond. In fact, no other concern will guarantee a roof for so long a period, much less furnish a Surety Bond.

The Surety Bond is offered on all Barrett Specification Roofs of fifty squares or more in all cities of 25,000, or over, *and in smaller places where our Inspection Service is available.* It is issued by the U. S. Fidelity & Guaranty Company of Baltimore, and exempts the owner from all maintenance expense for the life of the Bond.

Our only stipulations are that The Barrett Specification *revised April 15, 1920,* shall be strictly followed and that the roofing contractor shall be approved by us and his work subject to our inspection.

These roofs take the base rate of insurance and cost less per year of service than any other type of "permanent" roof.

Important Notice

The Barrett Specification Type "AA" 20-Year Bonded Roof represents the most permanent roof-covering it is possible to construct, and while we bond it for twenty years only, we can name many roofs of this type that have been in service over forty years and are still in good condition.

Where the character of the building does not justify a roof of such extreme length of service, we recommend the Barrett Specification Type "A" Roof bonded for 10 years. Both roofs are built of the same high-grade materials, the only difference being in the quantity used.

Full details regarding these Bonded Roofs and copies of The Barrett Specification sent free on request.

The Barrett Company

New York	Chicago	Philadelphia	Boston	St. Louis	Cleveland	Cincinnati
Pittsburgh	Detroit	New Orleans	Birmingham	Kansas City	Minneapolis	Dallas
Nashville	Syracuse	Seattle	Peoria	Atlanta	Duluth	Salt Lake City
Bangor	Washington	Johnstown	Lebanon	Youngstown	Milwaukee	Toledo
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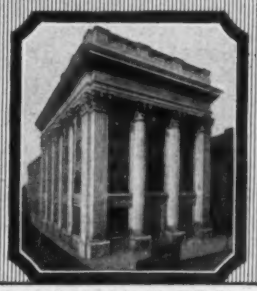
Omaha	Houston	Denver	Jacksonville			

THE BARRETT COMPANY, Limited:

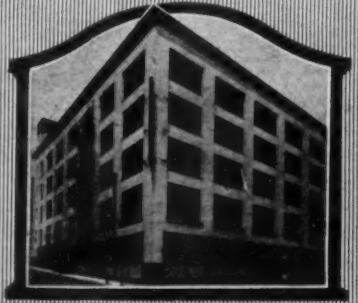
Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.



Baptist Sunday School Board Building, Nashville, Tenn. Arch., Hart & Gardner, Nashville, Tenn. Gen'l. Cont. Selden, Break Co., St. Louis, Mo. Roofer: Uncle Hiram Roofing Co., Nashville, Tenn.

International Harvester Co. of America, Nashville, Tenn. Arch: Concrete Engineering Co., Chicago, Ill. Gen'l Cont: Fuy-Proctor Co., Nashville, Tenn. Roofer: C.C. McInturf, Nashville, Tenn.

Burk Company Building, Nashville, Tenn. Arch: C. A. Aamus, Nashville, Tenn. Gen'l Cont: J. W. Patrick, Nashville, Tenn. Roofers: Phillips & Buttorff Mfg. Co., Nashville, Tenn.



Castner-Knot Dry Goods Co., Nashville, Tenn. Arch: M. P. McArdle, St. Louis, Mo. Gen'l Cont: Selden-Break Co., St. Louis, Mo. Roofer: Uncle Hiram Roofing Co., Nashville, Tenn.

Fourth & First Nat'l Bank Bldg., Nashville, Tenn. Arch: Ludlow & Peabody, New York City. Gen'l Cont: Foster-Creighton Co., Nashville, Tenn. Roofer: Phillips & Buttorff Mfg. Co., Nashville, Tenn.

Cumberland Telephone & Telegraph Co. Bldg., Nashville, Tenn. Arch: T. P. Marye, Atlanta, Ga. Gen'l Cont: Southern Fireproofing Co., Birmingham, Ala. Roofers: Phillips & Buttorff Mfg. Co., Nashville, Tenn.

is not to indicate that this space was isolated. Far from it. Why? W. K. Smith and Mr. O'Brien were there and entertained quite a number of visitors. And further, there is always a reflected glory to be had from a neighbor, be that neighbor a newcomer to the South or no.

A complete line of safety switches for looms and other cotton mill machinery, a line of vapor-proof lighting fixtures for cotton mill illumination, particularly adaptable in dyehouses and bleacheries, and a general line of "Condulets" for modern cotton mill construction, safety panels, flood lights and guy anchors made up the exhibit of the Crouse-Hinds Company, Syracuse, N. Y. F. H. Geyer had charge of this exhibit.

Mountain City Foundry & Machine Works, Greenville, had a display of gray iron mill castings and bronze, under the direction of G. W. Walker.

Interstate Cotton Seed Crushers Association had an exhibit on the stage including educational charts of the work of the organization.

Edison Lamp Works of the General Electric Company, Harrison, N. J., had reserved suitable space where a large representation of the organization were on hand greeting their friends and customers. An attractive calendar with a beautiful design, as well as a baffling little puzzle, was given out at this booth. Mr. Storey of Atlanta, Col. A. M. Jackson, of the Perry-Mann Company at Columbia, S. C., G. S. Jones, D. W. Peabody, A. F. Lively, S. H. Hardy, Mr. Mansfield and E. T. Austin were among those at this space. These men represented the lamp department, the mill power department, street lighting department and other departments of the organization. At this point, it is to be mentioned that the lighting of the first floor of the Exposition Building was by RLM reflectors donated by the Ivanhoe Regent Works of the General Electric Company and bowl enameled lamps donated by the National Lamp Works.

Beam heads were featured in the exhibit of the Frank Mossberg Company, of Attleboro, Mass. They had on display a line of pressed steel warper beam heads, loom beam heads, narrow fabric beams, and a newly constructed section beam head which attracted much interest. This beam head is made to do away with the old trouble of beam heads bending and thus causing an uneven selvage and of beam heads breaking. Also on exhibit were two socket wrench sets for mill use, one a heavy duty wrench set and the other to be used with looms, etc. There was also a line of spools and bobbins which this company manufactures for the wire industry and a jack spool for use in the wool industry. A loom beam head with geared let-off was also featured. F. G. Valpey, assistant sales, was handling the exhibit of this company.

The Aeroshade Company, Waukesha, Wis., were displaying the "Aerolux" ventilating shade equipment, and had on exhibit a shade of this design. These shades are so constructed that they admit a good working light, provide protection against not only the glare but also the heat of the sun, permitting sufficient ventilation even when the shade entirely covers the window. In the manufacture of these window shades, seasoned linwood splints are woven together with a hard twist seine twine into a fabric that can stand the gaff of hard industrial usage. The installation of these shades will eliminate the necessity for outside awnings and interior shades. There are several different types of this shade, for adaptation to different uses. The single type with regular hangings, equipped to hang at the top and roll from the bottom; the single type with top drop, adapted to south exposures and to deep rooms where workers in the center are dependent upon side windows for light; the duplex type, used where open ventilators in the windows extend inside the wall line and where the shades must occupy a minimum of room space. E. R. Kimball was the company's representative at the Show.

P. W. Drackett & Sons Company, manufacturers of industrial chemicals, were among the balcony exhibitors.

The Ware Shoals Manufacturing Company had a place in the balcony which was in charge of Miss Emory, the industrial nurse at Ware Shoals. Miss Emory had an attractive exhibit which included samples of goods made by the mills, a painting of the dam at the mill, and photographs of the various social service activities at Ware Shoals. James F. MacEnroe, assistant treasurer of the company, was at this exhibit several times during the week.

A comprehensive exhibit of how "Oakite" is helping cotton mills to operate in a more economical way in getting mill floors and textile fabrics clean was conducted by the Oakley Chemical Company. This exhibit consisted of cotton yarns, hosiery, blanket cloth, underwear tubing, velour, toweling, absorbent cotton, cotton tape, silk and other textile fabrics. Much interest was shown by the mill men in this exhibit, according to Frank J. Wall, southern representative, because now, as never before, there is need for the most effective and economical methods and materials in the processing and finishing of textile fabrics. With Oakite an emulsifying action is introduced in the cleaning of fabrics that gives results which are of very material aid, said Mr. Wall. In addition to Mr. Wall, there were in attendance at this booth Carl Johnson, technical department, and C. F. Radley, editor Oakite News Service.

The Atlantic Drier & Varnish Company had an exhibit specializing on mill whites and paint for mill villages. They also had on display a line of industrial paints, finishes and preservatives. Special attention was given to "Monad" brands, and colors in evidence reflected the "Monad" trade mark. R. A. Sherfesee, district manager in the South, and W. F. French, factory superintendent and Mrs. French were present at this exhibit.

Transmission Ball Bearing Company had a running exhibit which included a 48-inch cast iron pulley and two small pulleys driven by a 1/12 hp. motor using a fish cord for belting. At this exhibit there were two scales showing the friction secured by the use of babbitt bearings and also demonstrating the elimination of 75 per cent of the friction load by the use of ball bearings. As a background for the exhibit there was a blackboard illuminated by revolving lamps showing the different size bearings from the smallest to the largest. A. C. Shroth, sales manager of the company, B. C. Brown, and O. R. S. Pool, representing the Greenville Textile Supply Company, southern agents, were present at this booth.

A feature of the Saco-Lowell Shops exhibit was the new automatic dustless card stripper. This stripper is a combination of a high-speed stripping roll covered with specially designed wire, which will strip and let go, with a nozzle and damper connected by piping to a condenser which is connected with a common exhaust fan of low horsepower. The stripping roll is located in the V-shaped space between the cylinder and doffer, and together with the nozzle and damper forms an integral part of each card. By means of a short lever and eccentric the stripping roll is brought into contact with the cylinder and doffer as re-

C. E. RILEY, Pres.
Boston Office
161 Devonshire Street

Southern Office
Atlanta Trust Co. Bldg.
Atlanta, Ga.

COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery

Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H & B AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

quired, or into a neutral position, when the stripping operation is complete. One movement of the lever operates the stripping door, exposing the cylinder, and opens the damper which starts the air current simultaneously. The lever locks automatically when the stripping door and damper are fully open or fully closed. Some of the advantages claimed for this system are as follows: One operative can strip the card in about half the time required by two men using the common stripper roll. No tools or apparatus need be carried from card to card excepting the driving band for the stripping roll. As the stripping roll is not carried from card to card and laid upon the floor or other places, it is not subject to injury as in an ordinary stripping roll. The strips are delivered from the condenser in excellent condition, well open and practically free from dust. When the card is in operation, the stripping door is locked in position, preventing accidents to operatives.

The Sherwin Williams Company's exhibit featured their Eggshell mill white, a light diffusing surface for the interior walls of a mill or industrial plant. H. D. Leslie, manager of manufacturer's sales, W. H. Porter and A. D. Kiser, industrial maintenance experts, were present at this booth throughout the week.

Monroe Calculating Machine Co., New York, had an exhibit in the balcony showing the Monroe calculating machine, which will handle to advantage any kind of figure-work, and which is used by a large number of textile concerns, not only in the South but throughout the country. It operates in a direct manner just the same as such work is done by means of paper and pencil, but giving in addition to its simplicity and ease of operation a visible check of the accuracy of all work. It can handle two or three calculations simultaneously. Often an entire problem involving several steps can be worked completely to the answer by this machine. This exhibit was in charge of C. E. Dechant, district manager for the Carolinas, and E. Van Patten of Columbia, S. C., with others from the company in attendance.

F. J. Cooledge & Sons Company, Atlanta, were represented at the Show by Louis P. Batson. They were showing a display of their industrial paints including the "C-H Perma-White." They had a scale on which was placed a gallon of their outside paint weighing 18½ pounds net, indicating the covering capacity of the ingredients of this product. The exhibit featured house paint and mill whites.

The Refinite Company, Omaha, Nebraska, had on display and in operation one of their 6-inch demonstration model water softeners. Another interesting feature of this exhibit was the showing of the natural mineral, zeolite, in its various stages from the form in which it is mined, through the stages of development to the finished product used in the Refinite softener. There was also demonstrated the Refinite cleaner and polisher, made from the waste from the zeolite mineral. C. R. Travers, district manager, and Charles G. Smith, from the Atlanta office, E. R. Myers, Dr. W. Wolff, research chemist, and Miss Jeanette Greenfield of the Omaha office, were in attendance.

The Seydel Manufacturing Company, Jersey City, N. J., had an attractive booth on the second floor. This company manufactures the well known products sold under the trademark name of "Sizol." S. C. Thomas, who will soon celebrate his 15th anniversary as the southern agent of this company, was in daily attendance, and was assisted by C. C. Clark. The president of the company, Herman Seydel, visited the Exposition the latter part of the week.

The Fafnir Bearing Company, New Britain Conn.,

If You Want Efficiency Install a Lunch Room

Installation of Robert Gair Company, Brooklyn, N. Y.

Look for the "Raised-Rim"

—healthier workers

—less labor turnover

—buy permanent equipment

A COLD lunch, carried in a dinner pail or lunch box, becomes uninviting by lunch time. A hot meal at noon produces energy and promotes efficiency and industrial contentment. You can serve a hot meal in your plant at a minimum cost by installing a ***Sani*** lunch room.

The U. S. Department of labor estimates that it costs $500.00 to train the average employee for permanency. Why not save this money? A ***Sani*** lunch room in your plant will reduce the labor turnover and your employees will not want to move from one plant to another.

Sani-Onyx table tops are *radiantly-white,* durable, easy to clean and as hard and smooth as polished glass. The *"Raised-Rim"* (our exclusive patent) prevents chipping and dripping. ***Sani-Metal*** table bases are made of fine-grained cast iron, heavily coated with porcelain enamel. No projections or crevices for dirt to collect.

Write In Today

We will send you our latest catalogue showing all kinds of ***Sani*** food and drink equipment. This beautiful book contains valuable information and many illustrations. Send us your floor plan and our engineering department will lay out your space free of charge.

These materials may be purchased from local distributors. Our export department completely equipped to handle foreign business.

Sani Products Co.

667 Sani Building, Chicago, Ill.

showed a line of double ball bearing hanger boxes for line shafting and a beater and fan shaft on pickers, demonstrating the applicability of self-aligning ball bearings for this purpose. These hanger boxes have no bolts, washers or setscrews to come loose; all is in one unit. S. A. Pierce, sales engineer of the company, and R. N. Hemenway, manager of the industrial bearing department of the company, were in attendance at this exhibit.

Exposition Notes.

David C. Scott, of Henry L. Scott & Co., Providence, spent the week in Greenville. "Dave" held down one corner of a foursome which, it was rumored, smashed many records —just what records we didn't learn but the hostilities occured on the links of the Sans Souci Country Club. Mr. Scott was high in his praise of the Show—his first one at Greenville—and also of the splendid reception accorded him in the private home in which he stayed during his visit.

T. C. Perkins, president of the Atlanta Brush Company, was at the booth of his company during the week.

George B. Snow, who has been handling the "Felco" line of brushes with the cotton mill trade for some time, advises us that at the Show he found a general opinion that he was no longer connected with this line of brushes since the business, assets and good-will of the D. D. Felton Company were purchased by the Atlanta Brush Company. He wants us to state that he is with the Atlanta Brush Company and is still handling the "Felco" line of mill brushes, stronger, if possible, than ever before.

A. S. Bowen, Jr., from the Crystal Springs Bleachery Company, Chickamauga Ga., made a one-day visit to the Show. Accompanying "Si" was A. H. Bradley, superintendent of the cotton mill at Chickamauga.

Graham Slaughter, of the G. G. Slaughter Machinery Company and brother of Double G., was in charge of the balcony exhibit of the Greist Manufacturing Company, showing spinning rings and drop wires, on which prompt deliveries are promised.

L. B. Armstrong was another man on the balcony floor; he was at the booth of the Atherton Pin Grid Bar Company.

Rogers Fibre Company's exhibit was in charge of James L. Nieukirk, or "Sunny Jim" as he is known to his intimate friends. Leon B. Rogers was also present—minus the white trousers of ye olden days. The weather this year was perfect.

Lewis W. Thomason was there, too, with his convention smile. He was giving out as a souvenir a little memo booklet with the compliments of his company, the New York & New Jersey Lubricant Company. His son, Falls Thomason, was also present.

Representing the Anchor Post Iron Works were A. Blaeser, sales manager of the organization and George W. Forster, southern manager. Mr. Blaeser expressed himself as very much pleased with the Exposition and considered the reception accorded the visitors by Greenville as encouraging. This was his first southern Show and as were all others who were down for the first time, he was surprised at the size and value of the Exposition.

Mr. Blaeser is an exponent of optimism of the first order, despite the fact that he comes from that financial center where many people are "viewing with alarm." He said he found that many felt that the "country was going to the bow-bows" and seemed to think that we are on the verge of a great panic. This is the wrong attitude, says Mr. Blaeser. This country has survived periods of depression before and there is no reason why anyone should feel that the present one is going to continue or even to be a very serious worry. There is nothing alarming ahead of us, he stated, and expressed it as his opinion that the way out of trouble is to talk optimism instead of pessimism, to look on the bright side of things instead of the dark side. In a specific instance, many think that the steel industry is not going to do much, but Mr. Blaeser cited the fact that the railroads have yet to come into the market for steel because of the fact that the government has prevented extensive buying for some time. Though the steel market may have dropped off slightly, it is to experience a recovery, says Mr. Blaeser.

The opinion of this energetic, resourceful sales manager is, that the way to avert what might be a worse depression, is for everybody to talk and work together for more production and to quit "beefing" about the "hard times" now upon us, and to cooperate toward more efficient operation. Public sentiment can be made into a governing factor in business. When everyone gets to telling everyone else that the country is going to the dogs and the bottom is going to drop out of business, a general feeling is constructed which makes for pessimism and really tends to force business to worse conditions. But if everyone will analyze his particular situation he will see that he is not in such a bad way after all. He should then spread a feeling of cheerfulness and good will on among his brothers and his neighbors, and a decidedly different feeling toward business will be created. It's largely a matter of psychology, after all.

We don't know what field of endeavor was followed by J. W. Farris, Jr., before he went into the scrubbing equipment game as sales manager for the American Scrubbing Equipment Co., but after watching his antics and listening to his "spiels" on Friday and Saturday evenings at the Greenville Show, we have come to the conclusion that the circus world certainly missed a lot if by some hook or crook they did not have this portly gentleman as a "ballyhoo." This resourceful party had rigged up adjacent to the booth of his company some sort of a contraption under the caption "Barnum Was Right." This was free, "costs you nothing" said Farris, waving around a roll of bills that would choke the proverbial cow. To the casual visitor, it would appear that enclosed in the box was a wonder of the universe, and when the casual visitor took a peek into said box he saw—but we anticipate. To get back to Mr. Farris, we hope some day that we shall have the pleasure of hearing his stentorian voice beckoning the general public into the attractive diversion of another one of his "sideshows." It really will be a treat. We won't tell you what the attraction at the Show was, as that would be "spilling the beans" for Farris will probably have it or something better at the next one.

The Hopedale Manufacturing Company, Milford, Mass., in addition to having their running exhibit, were distributing instructive literature. Among this was a special Greenville Show circular by George Otis Draper, which described the "Nordray" cloth-roll motion and one of the new shuttles of the company, as well as the improved loom feeler.

Cecil P. Hostetter, district manager of the J. B. Ford Company, with headquarters in Atlanta, was a visitor at the Show. Mr. Hostetter was all "dyked out" with his "Texas Ranger" hat and so on. And don't forget the cane.

John Drysdale, of the D. B. Martin Co., Philadelphia, was also present and T. A. Brown, of the sales department

(*Continued on page* 59.)

EVEREADY

WELDING AND CUTTING OUTFITS

FORMERLY Prest-O-Lite APPARATUS

Built for hard and continuous service by the world's largest makers

GARAGEMEN, machinists, foundrymen, plumbers and steamfitters—those whose jobs call for the greatest variety of work and working conditions—have found the strength, lightness, simplicity and economy of Eveready a great advantage.

Built by Oxweld to conform to their high standard of workmanship, Eveready Welding and Cutting Apparatus is especially designed to supply portable, easily handled and well-balanced tools of unusual strength and great simplicity of construction—apparatus to stand up under the severest trials. Moderately priced and of low operating expense—no equipment made is better for its purpose.

Eveready Apparatus and Supplies are on sale everywhere. Fill in and mail the coupon for new catalog and name and address of your local distributor.

OXWELD ACETYLENE COMPANY
(Eveready Apparatus Dept.)
3644 JASPER PLACE, CHICAGO, ILL.

WORLD'S LARGEST MAKERS OF OXY-ACETYLENE WELDING AND CUTTING OUTFITS

Fill in the coupon TODAY

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Please mail me Free of Charge your New Eveready Catalog and address of your distributor in my locality.

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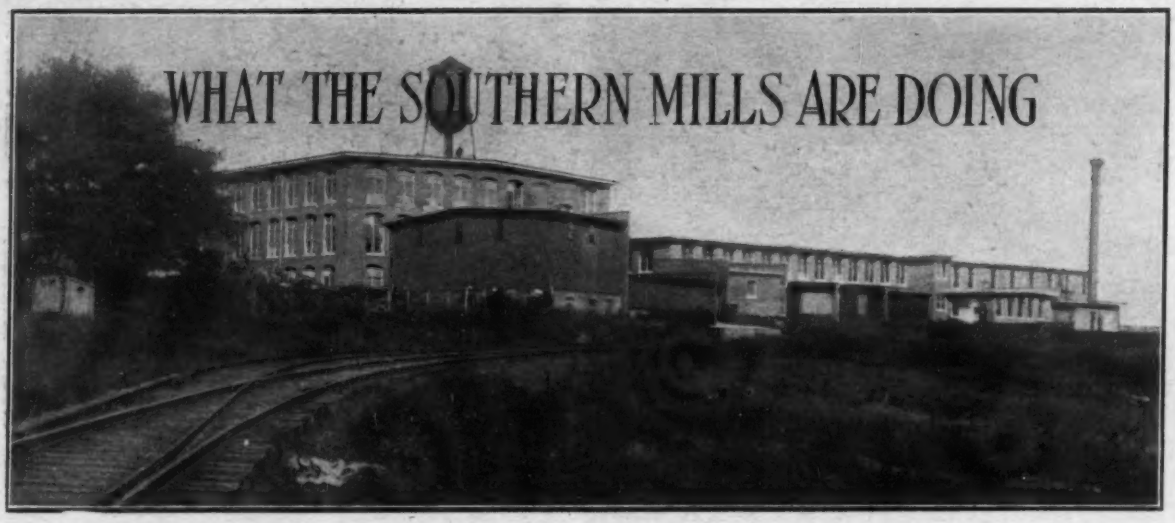
OE-510

WHAT THE SOUTHERN MILLS ARE DOING



POINSETT MILLS, GREENVILLE, S. C.

The annual meetings of stockholders and directors of the Unity Cotton Mills, Elm City Cotton Mills and Hillside Cotton Mills, of La Grange, Ga., and the Manchester (Ga.) Cotton Mills and the Milstead (Ga.) Manufacturing Company, were held recently. In the case of all the companies the old boards of directors were re-elected for the ensuing year, with the addition of Barrington J. King to the directorate of the Hillside Cotton Mills.

In pursuance of a plan of gradually shifting increasing responsibility to young shoulders, Cason J. Callaway was elected to succeed his father, Fuller E. Callaway, as director of sales and finances for all the mills, treasurer of the Unity Cotton Mills, Unity Spinning Mills, Elm City Cotton Mills, Hillside Cotton Mills, and Valley Waste Mills of La Grange, and president of the Manchester (Ga.) Cotton Mills and the Milstead Manufacturing Company. He is also treasurer of the J. T. Perkins Company, Brooklyn, N. Y., and is first vice president of the Cotton Manufacturers' Association of Georgia. Fuller E. Callaway becomes chairman of the board of directors.

CASON J. CALLAWAY.

GEORGE H. LANIER.

It is of interest to note that Wellington, Sears & Company, of Boston, New York, etc., recently acquired a stock control in the Anchor Duck Mills at Rome, Ga. This is one of the larger Georgia mills, having about 30,000 spindles in operation and its product of heavy duck has long had an enviable reputation. George H. Lanier, of West Point, Ga., has been elected president of the Anchor Duck Mills. Mr. Lanier is one of the best known cotton manufacturers in the country, being the active head of two hundred and fifty

SCOTTDALE MILLS, SCOTTDALE, GEORGIA.

thousand spindles in the West Point group of mills and his appointment as president of the newly acquired mill is indeed a tribute to his ability. Mr. Lanier is vice-president and general manager of the Fairfax (Ala.) Mill, the Lanett Cotton Mills, Lanett, Ala., Riverdale Cotton Mills, Riverview, Ala., Shawmut (Ala.) Mill, and the West Point Manufacturing Co., located at Langdale, Ala. He is also president of the Lanett (Ala.) Bleachery & Dye Works. Mr. Lanier is also a member of the Board of Governors of the American Cotton Manufacturers' Association. He will of course, assume the presidency of the Anchor Duck Mills in addition to his present duties. Horace S. Sears, of Boston, will act as treasurer of the Anchor Duck Mills. Mr. Sears is also treasurer of the West Point Manufacturing Company which includes several of the mills mentioned. No change will be made in the local management at Rome, it is announced, C. E. McLin remaining with the mill as general manager, and J. S. Bachman as superintendent. Both of these men have been identified with the mill since its inception and are in a large measure responsible for its success.

The Bonham (Texas) Cotton Mills, which were recently taken over by the Consolidated Textile Corporation, have repaired and put in first class condition all houses owned by it and rented to its employees. The improvements were made, it was announced, with a view to improving the living conditions of the mill employees and not with a view to raising rents.

The Merrimack (Ala.) Manufacturing Company is erecting an addition to Mill No. 1.

W. K. Whipple and O. P. Harlan are the incorporators of a company that plans to build a cotton mill of 10,000 spindles at Stamford, Texas.

The Linden Manufacturing Company, Davidson, N. C. has increased its capital from $100,000 to $500,000.

The Brogon Mills, Anderson, S. C., manufacturers of outing flannel, have increased their capital stock from $657,400 to $1,500,000.

The Riverside & Dan River Mills, Danville, Va., are having plans prepared for the development of a park with other improvements in its mill district. E. S. Draper, Charlotte, N. C., is the landscape architect.

The Munford (Ala.) Cotton Mill has spent $15,000 in remodeling and installing new equipment in its plant.

The Alta Vista (Va.) Cotton Mills are erecting a one-story addition, 30 x 55 feet, to their plant at an expenditure of about $30,000.

The Mojoto Mills, Laurens, S. C., has been organized with a capital of $10,000. Fancy shirting will be made and 20 looms will be operated, it is stated. David C. Jones is president and general manager with J. McD. Moore vice-president and J. W. Todd, Jr., secretary and treasurer.

The Henry River (N. C.) Manufacturing Company is installing a new water wheel, putting new rings on spinning and twisting, recothing cards, putting new grids in pickers and overhauling all machinery. A new machine shop is also being constructed.

The Pitts Manufacturing Co., Elberton, Ga., which recently purchased the Beverly Mill property, is taking out all the old machinery and installing 6,000 new spindles to make cotton yarn for the automobile tire trade, especially 23s single combed yarn for cord tires, to be on tubes and section beams, and made from 1¼-inch peeler cotton. All machinery will be new. The company is also installing a power station and will use electric drive.

The New England Mill Situation.

New England is suffering from depression brought on by a drastic decline in prices and a lack of opportunity to sell goods. Mills are closing steadily and the general estimate of production in the field as a whole is that it is a third below capacity. In New Bedford, the center of the fine yarn and fine cotton goods industry, it is estimated that much less than half the spindles are employed. Many large mills are running three days each week, others four, and some are stopping alternate weeks. Most of the mills are without orders and are accumulating stock even when running short time. This is unavoidable because of the necessity of running to fill the few small orders in hand.

For two weeks past sales of print cloths at Fall River were reported at 5,000 pieces weekly, the normal product being over a quarter of a million pieces weekly. In one recent week the total output of New Bedford mills was less than 25 per cent capacity. Throughout the district some mills have been closed for indefinite periods, but this is unusual the desire being to maintain working organizations whenever it is possible to do so without great loss. Manufacturers have been buying very little cotton, and many are still marking off losses on the stocks of cotton they own. Until there is a resumption of demand for goods their interest in cotton markets will continue to be that of onlookers.

Cancellations of orders, requests for rebates, and deferred deliveries, continue to figure in the day's business of mill managers. The unmercantile practices in the trade have far exceeded anything hitherto known, and even if some buyers were to submit orders many mills would decline to take them because of questions arising from credit standings. Mills making anything of a fancy character

have been deluged with claims from customers who are seeking to get away from their obligations.

The decline in prices for finished goods have been made in a way that has attracted general public attention and discussion. A few days after the reductions of the Amoskeag Company on its gingham lines had been announced in the New York markets, a news item was sent broadcast from New England featuring a cut of 33⅓ per cent in Amoskeag products. Soon after the new owners of the B. B. & R. Knight mills in Rhode Island took over the plants a reduction of 15 cents a yard was made in Fruit of the Loom 4-4 muslins and this was widely advertised. Cuts in wide sheetings, Lonsdale and Hope muslins, and many other goods were announced, all bringing the markets down to a parity of the declines in gray cloths or nearly so, and the facts were printed in all the newspapers of the country.

One of the smaller printers of percales cut the price on 4-4 64x60 printed percales 50 per cent, or 15 cents a yard, and announced that it would do business without price guarantees or protection. The larger printers did not follow and at this writing were still in doubt as to what price to make.

If the conditions were normal or nearly so, such radical price reductions would stimulate business with jobbers and cutters. But it appears that buyers are still very doubtful and are not prepared to place anything more than a filling in business in very light volume.

The wide publicity given to these price concessions should have stimulated retail buying. But the retailers are in no hurry to liquidate at a loss and they have been very deliberate in passing on the low prices to consumers. At the same time, the reductions must convey to the general public proof of the abandonment of a profit margin by manufacturers and must help in calling attention to the remarkable change in conditions that has caused such losses to cotton growers and cotton cloth producers.

The unstable cotton market has had some effect in bringing on a further unsettling of gray goods prices. They have now dropped to a basis of 10 cents for 38½ inch 64 x 60s, as against a price of 26 cents that prevailed in April of this year. They were sold in very moderate quantities at 9½ cents by a few second-hand traders. The large printers and converters have manifested no interest in buying although they admit that current prices are exceedingly low and attractive, if cotton is not going below 20 cents a pound. If a still lower price for cotton becomes a fact manufacturers expect that buyers will hold off in the cloth markets and await still lower prices.

It is generally contended by manufacturers that they cannot make cloths profitably on a basis of 53 cents a pound for print cloths from cotton at its present price. Within the next few weeks they expect to arrive at some arrangement with operatives whereby lower wage schedules will become effective December 1, which marks the expiration of the wage agreement period. That lower wages will be offered and probably accepted is the general belief. In some sections lower wages have actually gone into force. The employees of the Massasoit Mfg. Co., at Fall River, a concern making comfortables and waste products, have accepted a 20 per cent reduction. They are not affiliated with trades unions and the mill is not represented in the cotton manufacturers association.

One of the large silk mills of Rhode Island is operating on a reduced wage schedule, while the Slater Mills of Webster, Mass., are running three days a week on a lower wage schedule suggested by operatives in order to assure them of work. The Lawrence Hosiery Mill employees asked their employers to reduce wages if that would assist in keeping the mill in operation. These and other similar signs of a changing spirit among workers lead to the belief, mentioned above, that a lower wage scale on December 1 is inevitable and will be brought about without friction.

Price conditions in the cloth markets have become so bad that cotton manufacturers are very much at sea as to whether a wage reduction will help very much in readjusting things to a profitable basis. At every turn to make better conditions for the buyer of goods in the past few weeks, less confidence in values has been expressed. Manufacturers are told by merchants that an improvement is inevitable after election day, but they have been told similar things for weeks past and have still to see signs of an end to the deflation that has been going on. Manufacturers are very much inclined to think that there will be no substantial improvement until positive signs are evident in financial markets of a lessening of financial pressure.

If farmers, who are the essential producers of the country, are to be given encouragement and assistance to grow food and textile materials, they must be taken care of financially until their crops are moving to market and they are getting some return from their season's labor. That means that merchants and others must stand aside for a time unless they can finance their own business without the help of banks. It was fully expected that better conditions in crop moving would have been realized before this time. Until they are realized, experienced manufacturers say business in goods will not revive very much. The matter of price is not so vital now as the matter of getting a market at some price.

Many mill meetings are scheduled for the last of this month and the first of next. They will show earnings all hived before the last quarter of the fiscal year. A very large part of the earnings will be absorbed in the marking down of inventories. Reserves will be cut into and are being cut into. Taxes, municipal, state, and national, are growing more onerous and in centers like Fall River they are three or four times greater than in 1914. They are a new and permanent increase in the costs of production.

One of the very positive developments of the past month has been the restoration of competition for any business that comes into sight. Mills are competing with each other for orders and that is making it more difficult to arrive at any stable basis of price in the markets. Many inexperienced traders are in the markets and they have not learned that the time to sell or to offer goods is when the buyer wants to take them or needs them. Pressure to force the buyer on a declining market invariably results in depreciating the value of the goods offered, yet such a pressure is evident at this time.

The dullness in the converting trades is reflected in the absence of business in cloth mills and in finishing companies of all kinds. The finishing plants are running less machinery than they did after the armistice. They are hobbled in the matter of reducing costs because they have not yet been able to liquidate labor costs. They are also compelled to pay fully twice as much for coal as they did last year and in some instances more than twice. There has as yet been only minor reductions in the costs of

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dyes and other supplies. The same condition prevails with job printers, dyers, etc.

Owing to the steady maintenance of dividends at or above average rates, mill stock values have not declined as rapidly as they have in other periods of great depression and growing idleness in the industry in this section. Yet one of the largest mill stock agencies estimates that the developments of the past four months have shrunk values in mills $250,000,000 and caused a loss of $100,000,000 in revenue to the national government. One of the grave questions of the hour is the one of how to meet the shrinkage when the tax collector begins to come around after the turn of the year. The hope that credit restrictions will be relieved before Christmas is general but at this time it is a hope and not a fact that is helping out.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, October 22, 1920.

A combination of unfavorable developments, the economic situation, stringency of money, the unfriendly attitude of the Secretary of the Treasury towards agricultural interests, Washington's reiteration from time to time, almost from day to day, predicting lower prices for commodities, and the British labor troubles, threw the cotton market into a state of almost demoralization of late, values having declined nearly 10 cents per pound or almost $50 per bale compared with one month ago.

However, farmers, themselves, especially those in South Texas, where the crop was early and large, are partly to blame for the recent drastic decline in the market, as producers in that section have been persistent sellers since the opening of the season, and as there was an absence of an urgent demand, prices declined rapidly under the weight of offerings.

Even at the present low level the immediate future of the market remains uncertain because of the threatened British coal strike having become a reality, and the possibility of a general strike in event of other unions striking in sympathy with the miners. As British labor now stands, there is to be a meeting of the Federation next Wednesday. If a general strike is called, the situation will be all the more serious. In order to cope with such a possibility, a bill has been introduced in Parliament for the purpose of giving the government war-time powers. Further developments are eagerly awaited by cotton interests.

Already the product has been reduced in value to a level far below the cost of production and the staple's intrinsic value, and unless complications develop in the British coal crisis, cotton at its present level appears to be more of an investment than a speculative risk; a situation and opportunity which should be taken advantage of by the trade, especially by American spinners by buying freely while the market is low for their future requirements. We anticipate such action on the part of European mills. When the demand broadens, the reaction in the market is likely to be swift and important.

In our opinion the present condition of the market is due to a great extent to a want of confidence on the part of the southern farmer because of the bearish literature, propaganda we might say, which was sensationalized by newspapers, resulting in a costly scare.

There is no reason whatever for the South to become alarmed as to the future. On the contrary it should face the future with the assurance that all will be well eventually since the South has a monopoly in the production of cotton and is in a position to dictate the price at which it may care to sell.

The southern states are self supporting and do not need outside financial help to care for this year's crop which promises to be comparatively small for the sixth consecutive year, pointing to about 600,000 bales less than was indicated last month—12,123,000 bales vs. 12,783,000 indicated by the September Bureau report.

All southern interests are aroused to the necessity of lending a helping hand to care for this year's crop, and efforts in this direction are meeting with success in every section. Southern banks, bankers and merchants were never so well off financially as they are now, and as it will be less difficult to finance the crop than it would be if prices were very much higher, the brains of the South now seem to have the situation well in hand.

Statistically, present and prospective, the position of cotton is strong, and this fact will exert its influence ultimately. As a matter of fact the indicated supply of American spinnable cotton for this season is 215,000 bales smaller than it was last season, and last season it was insufficient to prevent prices from advancing to the highest level in 50 years. It will be interesting to reckon with the following comparatives, linters excluded:

Indicated supply of American Cotton—	This Season	Last Season
World's carry-over July 31st.....	5,086,000	6,094,000
Indicated crop, government estimate....	12,123,000	11,330,000
Total indicated supply	17,209,000	17,424,000

Under the circumstance, with middling quoted at New Orleans today at 19 cents vs. 36.88 this date last year, we strongly advise buying, especially on important depressions.

Short Cuts for Belting Users.

The Flexible Steel Lacing Co., Chicago, manufacturers of Alligator steel belt lacing, have recently published a text book on belts under the title "Short Cuts to Power Transmission." Beginning with the different kinds of belting, its manufacture, uses and desirability, the book takes the reader through the entire process of selecting, ordering and installing belting. Some space is, of course, devoted to Alligator steel belt lacing, but other methods of belt jointure are also given. Pulley sizes, belt lengths and sizes, idlers, jackshafts, speeds, tension, horsepower and dozens of modern belting hints are covered carefully and fully.

The work contains "short cuts" and simplified explanations that enable even an inexperienced belting man to easily understand and solve belting problems that arise from day to day. Every user of belting, even if he has a technical education, will find this volume of great assistance. Complimentary copies can be obtained by writing the Flexible Steel Lacing Company, 4619 Lexington St., Chicago.

You may put it down as a sound principle that success, fame and fortune will never camp on your doorstep until you quit charging your failures and shortcomings to others.

Notes About Men You Know.

H. R. STEPHENSON, for some time superintendent of the Union Bleaching and Finishing Co., Greenville, S. C., has resigned and accepted the position of general superintendent of the Lanett Bleachery and Dye Works, West Point, Ga.

R. W. ARRINGTON, for the past year and a half a cotton mill selling agent in New York, has accepted the superintendency of the Union Bleaching and Finishing Company formerly held by H. R. Stephenson, resigned. The new superintendent is a son of the company's president, John W. Arrington, Sr.

SLOAN Y. STRIBLING, treasurer of the Roswell (Ga.) Manufacturing Company, died recently at the age of 52, following a long period of ill health.

D. J. GARDNER has resigned as superintendent of the Adrian Manufacturing Co., Mt. Holly, N. C., to accept a similar position with Myers Mill, Gastonia, N. C., says a report.

M. C. DAWKINS has resigned as superintendent of the Calhoun (Ga.) Yarn Mills.

M. A. MARET, secretary of the Eatonton (Ga.) Cotton Mills, has been appointed secretary of the Lois Mills, Douglasvile, Ga.

H. W. PITTMAN has been appointed assistant general superintendent of all mills of the Bibb Manufacturing Company.

J. N. HOWARD has been put in charge of twisting at the Capps Mills, Toccoa, Ga.

L. M. CULBRETH has been made superintendent of The Corley Mills, Cumberland, N. C., succeeding L. J. Swink, resigned.

GEORGE D. SIMPKINS has been put in charge of spinning spooling and warping for the Consolidated Textile Corporation, Pelham Division, Pelham, Ga. He has been with the Bibb Manufacturing Company for the past year.

H. T. GODFREY, spinning foreman at the Woodside Cotton Mills at Simpsonville, S. C., has accepted a similar position on the night run at the Ware Shoals (S. C.) Manufacturing Co.

J. B. LAUGHLIN, cloth room foreman at the Clinchfield Cotton Mill, Marion, N. C., has resigned to accept a similar position with the Enoree (S. C.) Manufacturing Co.

J. R. HANSON, foreman of twisting, winding and spooling at La Grange, is now spinning foreman at the Gluck Mills, Anderson, S. C.

EDGAR LOVE, prominent cotton manufacturer, of Lincolnton, N. C., was instantly killed when the automobile in which he was riding was struck by a passenger train, between Charlotte and Gastonia.

H. LEE DEARMAN has been made spinning foreman at the Vass Cotton Mills, Concord, N. C.

J. D. DOWLES, formerly at Hope Mills, N. C., has been appointed superintendent of the Springfield Cotton Mills, Laurel Hill, N. C.

JOHN K. PRAY, general manager of the Flint River Cotton Mills, Albany, Ga, died recently at a hospital in Minneapolis, Minn. The body was taken to Albany for interment.

A. M. STANTON, superintendent of the Collier Mill No. 2, Macon, Ga., has resigned this position to accept a similar position with an eastern mill.

E. O. STEINBACH has resigned as superintendent of the Rodman Heath Cotton Mill, Waxhaw, N. C.

JOHN A. PORTER, of Macon, Ga., general superintendent of the Bibb Manufacturing Company, recently spent a three week's vacation in the Yellowstone Park section.

V. D. LEPORTIER has resigned from his position as overseer of dyeing at the Deep River Mills, Randleman, N. C., to accept a similar position with the Swift Manufacturing Company, Columbus, Ga.

L. BANKS HOLT, president of the L. Banks Holt Manufacturing Company, Graham, N. C., died recently at his home in Graham. Surviving him are his widow and four daughters.

Cafeterias and Club Rooms.

There is at present a general interest aroused in the cafeteria style of service in manufacturing plants. There are mills who find in the operation of a correctly maintained cafeteria for their operatives a substantial aid toward relieving labor troubles and turning out more product. Well cooked, nourishing food, in an up-to-date, sanitary cafeteria, will make for a healthier, more contented set of people. The manufacturer contemplating the installation of such equipment, however, encounters any number of problems in connection with such action. The proper arrangement of equipment; the location; the size and layout; the correct facilities; these are some of the things which a mill runs up against and which the inexperienced man is unable to suitably solve. The services of an expert had best be brought in.

A really interesting booklet of 86 pages, in an attractive cover and profusely illustrated, has just been published by Albert Pick & Company, Chicago, which deals with the cafeteria of today in a comprehensive manner. Those interested in the subject will undoubtedly find this booklet a very appropriate one, and copies can probably be had upon request.

This company has also just recently issued Catalogs B-37, B-28 and D-64. These deal with soda fountain supplies, soda and hot drink supplies, and billiard, bowling and club room equipment and supplies respectively. They all show reproductions of the different products and should be interesting to anyone contemplating the installation of any of the equipment with which they treat.

The Barrett Company has issued a "Roof Flashing Handbook" in which is discussed the subject of roof flashings and flashing blocks and other related subjects. Specifications for the installation of Barrett flashing form and flashing in concrete walls, of Flex-lock flashing for brick walls, etc., are also given space.

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STRAIGHT LINE METHODS

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

Sizing Up the New Job.

EDITOR COTTON:

It is of immense interest and value to all concerned to know what to do first when taking charge of a plant. Upon these important matters depend more than can ever be written about with reference to the success of the new executive, together with the prosperity of the plant and operatives.

In the first place, there are many things which the new man on the job should avoid saying and refrain from doing. On the other hand, there are even more things which he should do and do them rapidly. Upon these dual systems depend the rapid rise or the sure downfall of the new man.

With some new bosses, everything goes sailing smoothly and all the help brag about his ingenuity and uprightness. With others, everybody seems crestfallen and despairing, and the failures throughout the plant become the talk of the town. The difference between the two situations is tact—it is a matter of having plenty of tact in the one case, and a great lack of tact in the other.

When a man takes charge of a plant, he should remember a few things at the very start.

First: That everybody, directly or indirectly interested, is desirous of his success, and wants him to succeed very much. This is usually the situation everywhere. Let us not be misunderstood in our broad statement, which proves itself by the following analysis of the situation anywhere: 1st, the company wants him to succeed. This includes the officers and the stockholders, many of whom may be living in the town where the mill is located; 2nd, the help all want him to succeed; 3rd, all the business men in town want to see success under the new management; 4th, all the relations of the help in town, together with the cousins of the stockholders mean to have him succeed; 5th, the new man himself wants to succeed; 6th, the selling house wants him to succeed; 7th, all the generously minded people of the town who love the welfare of its community pray for his success.

This being the case, the new executive has nothing whatever to fear from the general public sentiment, nor from that surrounding the plant. But there are some men who feel that when they land in a new position, everybody is opposed to them, and the general situation is one of antagonism rather than one of pure cooperation. It therefore behooves a new executive to be prudent and conservative concerning this vast and general asset which can not be purchased. It is already his, free and generously provided for him without his asking for it. He can accept it and make the most of it, or he can break into this faith and kill it, making it his most unyielding foe.

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

With these facts concerning the general human element in and out of the plant, we rest our case to have our new executive do some proper thinking on his own account, and draw his own conclusions. He must remember that the life of a community is a unit. It is wonderfully alive. Co-related, and peculiarly organized as one body.

Now, taking up the human element within the plant itself, this is quite a different problem. Its physical properties will respond only to real ability in the executive organization. He should give everybody the benefit of the doubt, and make everyone feel that they are people of ability, and that, of course, with ability such as he finds, things are going to respond successfully. This is one of the best organization builders with which he can start. It cheers up the help. It braces them up to show that the new executive has made no mistake in his estimation of his co-workers. Some of the poorer hands will even study nights to improve themselves to make certain of not disappointing him.

The new executive should seize the first opportunity to fill any vacancy from the ranks of his organization as he found it. He should also avoid forcing any resignations, so far as it possibly can be done. Every vacancy created should be a voluntary one, especially during the first year of his incumbency.

Regarding the working condition of the machinery, there are quite a few working points which the new manager will need to size up rapidly, and fix up if necessary. It does not take long to remedy a few defects here and there which will improve the work. He should immediately inspect the beater blades on the pickers, to see if they are sharp enough. They also must not have a knife edge. He should examine the cards to see what new card clothing is needed, and see that the grinding is kept right up, and if behind, that it is caught up. He should be quick in inspecting the speeds to make certain no machine is overspeeded. Quite likely he will find that some of the speeds are too high. This very thing may have killed his predecessor's success.

While over-speeding will prevent the successful opera-

tion expected from all machinery, there are a few places in many mills where over-speeding seems general. This is at the drawing frames, spooling and warping. The new man must at once make certain that these speeds are not too fast. It is also a peculiar coincidence that these three processes are not only the prey of over-speeding, but that there are no other processes in the mill where so much injury can be done to the yarn as by over-speeding these particular machines.

Looms are the next prey of the over-speeder. While looms can not improve the yarn, over-speeding a loom will spoil the best running work ever prepared for them. Be sure your looms are not over-speeded. Even one pick per minute too fast may wreck the mill.

Steel rolls should come in for a rapid inspection. These must be set right and be sharp, bright and well cleaned.

How about the general system of scouring, oiling and spindle setting, lining and leveling of the machinery? These are some of the great things which can be done very soon to make the work operate better. Making certain that the raw cotton is properly blended, mixed and expertly opened, will aid much.

Lastly, the system of number keeping must be of the most exacting standard. Starting with the careful weighing of the laps and following the subsequent processes carefully will give a smooth yarn which will be the pride of the help. Be sure all scales are inspected and that they weigh correctly.

It does not take long to inspect and ratify the points mentioned and to start the system which will give the largest returns in the shortest period after the new man takes the position. The great thing is to show, from the start, that the new man is on the job, and that his first three months' work shows some marked improvements. When this is clearly apparent confidence is fully established, and the new man has passed through the first stage of his career successfully. His second stage will be much easier for him. He should guard strenuously against mistakes of any kind either on his part or through his subordinates. But should any be made, they are more likely to be over-looked if his first stage is passed through with a master stroke of a genius. Fairness (R. I.)

Two New Offices for Kaumagraph.

The Kaumagraph Company, 209 West 38th St., New York City, has recently opened two new branch offices, one at Boston and the other at Chicago. The Boston office is located at 136 Federal Street and is in charge of F. X. Hess, who was for a number of years connected with the A. C. Lawrence Leather Company. The Chicago branch is at 209 So. Dearborn St., and Robert V. Taft has charge. The business of the Kaumagraph Company has increased so rapidly in recent years that it has been found necessary to open these branch offices to properly care for the customers in the respective sections. This company manufactures an extensive line of goods, known as "Kaumagraph Dry Transfers," used for the identification of hosiery, underwear, woolens, silks, cottons, leather, garments and many other articles.

Some Knitting Questions and Answers.

EDITOR COTTON:

Will you please ask the following questions through the Practical Discussion Department of the next issue of COTTON?

What should be the cut of a cylinder and dial making a ribbed fabric 28 stitches to the inch using a No. 18 carded cotton yarn and a 36 gauge needle with a 36 gauge hook? Will a 36 gauge needle with a 42 gauge hook help to make a tight tension? How great a difference will there be in machines using cylinders and dials, between a 36 gauge hook and a 42 gauge hook? What would be the proper number of yarn to use on a rib machine using 36 x 36 gauge needles, cut 260 needles to 4 inch diameter, to produce a fabric 28 stitches to the inch?

P. D. B. (Ill.)

EDITOR COTTON:

In answer to "P. D. B.," regarding the cut of a cylinder and dial for knitting a fabric 28 stitches to the inch, with 18s carded yarn, he failed to state what size fabric in length he desires. A few cuts as to size are as follows: For a size 8 a 136 cut or for size 9 a 148 cut would be practical with 18s yarn. Using a 36 gauge hook the difference in a 42 gauge hook would give the fabric a finer appearance in finish showing a tighter, smoother grain and making the product appear a more desirable fabric for market.

For a rib machine using 36 x 36 gauge needle on 260 cut to 4 inches diameter, I would suggest from 2/34 mercerized or lisle to 2/40 mercerized or lisle according to the weight of hose required. I have used 2/50 where a webbing was desired elastic, or as coarse as 2/30s.

For a fine appearing fabric, with a cylinder cut 36 x 36 gauge "P. D. B." could possibly secure a 42 gauge hook or 36/42 hook needle for the dial, which would give a finer weave and handle finer yarn. Bob (Iowa.)

EDITOR COTTON:

I submit below my views on the questions of "P. D. B. (Ill.):"

1. What should be the cut of a cylinder and dial making a ribbed fabric 28 stitches to the inch, using a No. 18 carded cotton yarn and a 36 gauge needle with a 36 gauge hook?

Assuming that a fabric with "28 stitches to the inch" is the equivalent of a rib fabric with 14 wales per inch (14 on the face and, of course, 14 more on the back) the following answer is supplied:

The equation which may be used to determine what is the mean between the coarsest and finest gauges that one would expect to use, is

$$\text{Size of yarn} = \frac{\text{Cut}^2}{6}$$

Supplying the size of yarn to solve, we have

$$18 = \frac{\text{Cut}^2}{6} = 108 = \text{Cut}^2$$

Extracting the square root of 108, we find the Cut = 10.4. Reference to what tables are available locates the possible range of cut for an 18s yarn between 8 and 11.5 cut.

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Consequently, 10.4 would fall within the correct range.

2.—Will a 36 gauge needle with a 42 gauge hook help to make a tight tension?

Since the 42 gauge hook is slightly smaller and finer than the 36 gauge hook, it is to be expected that the loops which it draws will be just a slight amount smaller and, consequently, will give a fabric with a little tighter stitch. It does not seem possible that the gauge of hook will affect the yarn tension and vary the fabric in that way, but it is quite possible for it to make a slightly smaller loop or tighter stitch because of the reason first given.

3.—How great a difference will there be in machines using cylinder and dials between a 36 gauge and a 42 gauge hook?

The gauge of needles is not a positive thing. There are several makes of needles which vary in thickness for the same gauge number. Different manufacturers have their own standards by which they gauge their needles. The following data may be taken as a range of thicknesses for these sizes:

36 gauge = .028 to .030 inches thick
42 gauge = .025 to .028 inches thick

The slots or cuts for these needles are such that a machine cut for 36 gauge may be run with 42 gauge needles, but generally a 36 gauge needle will not fit in a 42 gauge slot.

4.—What would be the proper number of yarn to use on a rib machine using 36 x 36 gauge needles, cut 260 needles to 4 inches diameter to produce a fabric 28 stitches to the inch?

In the first place, the following assumptions are made: 260 needles is the total number in the machine and they are divided half and half between the cylinder and the dial; 28 stitches to the inch is the product of 14 cylinder and 14 dial and makes a fabric with 14 wales per inch on both sides. Then, there would be 130 needles around a 4 inch cylinder, which is 10.35 cut. For these conditions, the mean yarn may be found by using the expression:

$$\text{Yarn size} = \frac{\text{Cut}}{6} \text{ or}$$

$$\text{Yarn size} = \frac{10.35^2}{6} \text{ or}$$

$$\text{Yarn size} = \frac{107.1225}{6} \text{ making}$$

Yarn size = 17.8538 or practically an 18s yarn.

Further, when the fabric is knitting, or on the needles, it will have 10.35 wales per inch, but due to the contraction in width which takes place, the wales per inch may easily increase to 14. The actual contraction will depend somewhat upon the cotton in the yarn and the twist and elasticity of the yarn. G. R. M. (Mass.)

The 1921 Spring Season Color Card of America, issued by the Textile Color Card Association of the United States, Inc., 315 Fourth Ave., has been completed and is now being sent out. This card is issued in accordance with the policy of the association of standardizing colors for industrial purposes in order to simplify color work and shows standardized colors forecasting the season's color development.

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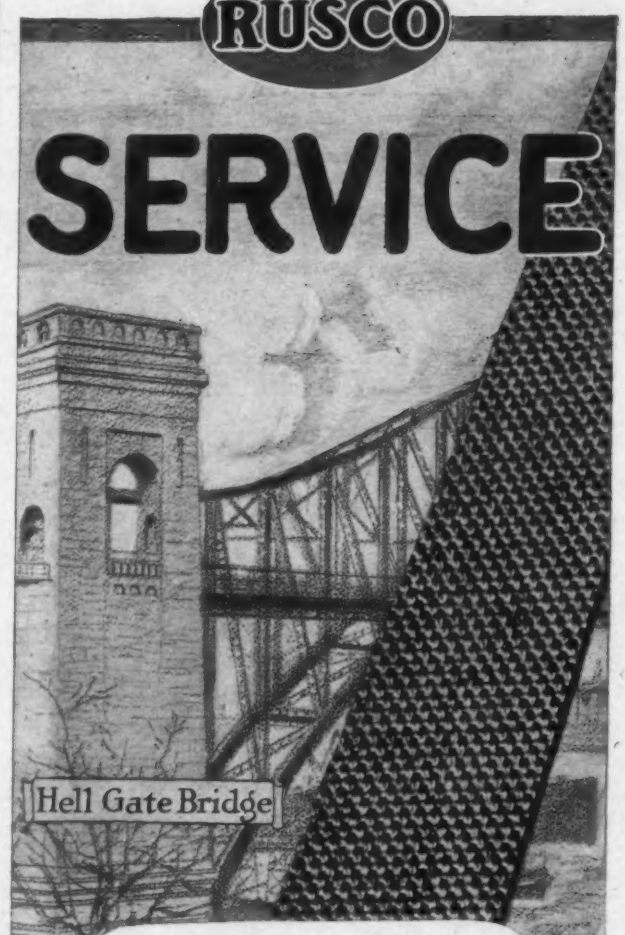

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Dressing Cone Belts.

EDITOR COTTON:

In reading COTTON for September the article by "Wash. (Conn.)" brought to mind an experience when I was an operative on roving frames. The cone belt got to slipping and made soft bobbins, especially when the weather was dry, and seeing some of the older ones putting belt dressing on the cone belts I thought I would try it. At that time we used "English rosin soap," mostly as a preservative, for belt slipping, so I went around and gave mine a soaking, only to get myself into trouble later, for when a frame once gets started on a new set of bobbins, you have got to let it alone until the frame is "doffed" and a new set is started before you can successfully temper-up the driving belt of the cone.

I wondered how many, after reading "Wash's" article, would unconsciously take a stick of belt dressing and go around and grease up the cone belts without ever noticing where the cone belt was at the time they greased it, perhaps being caught as I was at that time, when an operative thought more of his job than at present and had to give an account of every detail of the happenings on his machine. Then the thought occurred to me to give my experience.

After having an experience of this kind I know whereof I speak. You must do all belt dressing on the cone belts when they are first started off after a new set of bobbins has been put on the roving frame. If you don't you can look out for high tension troubles, for when you grease

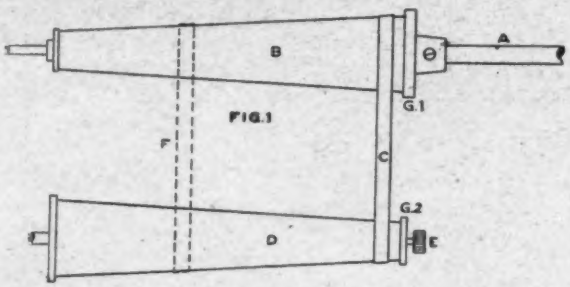

FIG.1

FIG.2

FIG.3

a belt it is bound to pull tighter and if you set the tension rack for ordinary circumstances and then grease the belt after it has started on its way, it means that it will pull tighter and cause the ends to be too tight, owing to the cone being driven too fast, or faster than the rack is set for.

Figures 1 and 2 show the top and bottom cones respectively, the top, Fig. 1 being the driving cone. (A) is the shaft running through the top cone, (B) is the top cone, (C) is the cone belt that runs the bottom cone that drives the bobbins, and is the one to regulate as it has its effect on the tension of the roving frame. (D) is the bottom cone, which rests to a certain extent on the cone belt, and if the cone belt is of the proper length the cone will run smooth and the tension will be even, providing the rack gear is properly figured to carry the cone belt on its way sufficiently fast to regulate the speed of the bottom cone, which in turn drives the bobbins. (E) is the bottom cone gear on which depends the speed of the bobbins, but it is hardly ever changed as there are other gears that can be changed more easily than this one. This speed is carried from (E) on through a train of gears to the compound center, or sun-wheel gear and thence to the bobbins. (F) is the location of the belt where I got caught as a roving frame tender, when I undertook to temper-up the ends on the frame. Not knowing, I greased the cone belt as is indicated by dotted lines at (F), when the cone belt was nearing its destination and the bobbins nearly full. Then the ends got so tight I could do nothing with them, so I had to doff the frame.

G1 and G2 are the ends of the two cones. It has been found from long experience that to set the cone belt about two inches from G1 and G2, or from the end of the cone, gives the best results. Then when this is done, you must put on the proper gears to carry the rack shaft out and produce the most even tension on the frames.

The contact of the cone belt has a lot to do with the tension you get on the frame and the narrower you can run the cone belt the better it is for the frames. There is a cone belt made that has a rider on it but they are stitched together, the one on the outside is about two inches and the one on the inside is about one inch. Figure 3 shows an end view of the belt mentioned. This type of belt gives good satisfaction and hugs the cone very nicely. The smaller strip of the belt is inserted and fastened to the wider top belt by stitching the two together. This gives a finer tension owing to the narrowness of the inner belt, while the top belt being wider gives strength, and both being fastened together makes it almost a double belt throughout. In my opinion this is the only way you can successfully run a double belt. An ordinary double belt will not give satisfaction and being stiff, it will crack and slip on the small end of the cone.

The inner strip shown in Fig. 3 is about one inch wide but if it was not for having the top strip of belt yo could not make out with a one inch belt because it would be too light. Some objections may be raised to the strip of inner belt because it might come loose, but should this occur it's an easy matter to stitch or rivet them back together again.

T. A. D. (Ga.)

Contributor No. 14 and His Slubber Drafts.

EDITOR COTTON:

In reply to "Benjamin (Conn.)" in the October issue of COTTON, about his comments to "Contributor No. 14," I wish to point out that the first of his comments is on the beater. This was a stenographic error which made me say a porcupine beater, it should have read pin or Kirschner carding beater. In correcting the letter, that part was overlooked by some means, as any mill man knows the difference between the two. It but proves that COTTON is closely read to single out such mistakes, and it brings about the desired results, i. e., constructive criticism.

Again on page 855 he says that the steel rolls on the drawing are not to his liking, as he says that the contributor would not want to run sliver where they were set the same, i. e., the same setting of the rolls from center to center of each of the steel rolls. "Benjamin" must take

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into consideration that the numbers to be run were from 12s to 20s, and if the 12s were run separate from the number 20s, then the rolls on the drawing frames could, and would be better set to have the two back rolls open some, for doubtless the card sliver would be slightly heavier than would be the case if running on number 20s alone. That being the case the rolls could be run closer as the sliver would be lighter, and all mill men are aware that the settings on light work run closer than they do on heavier work.

I have run them both ways on the same grade of work, but I found that for number 20s I got better results from the close up setting, got evener work and the frames run better, and when the frames run better you generally get better quality and at the same time better production.

With reference to the drafts on the slubbers, with experience from both drafts, the best results secured on the number 12s was from a draft of 4.10, and on the number 20s the best draft was 4.50. In giving the drafts in the article the writer did not go into all the details of the why of the drafts, but left it to the one who might try it as having had experience enough to know that the lighter the work the longer the draft can be and generally is run. Of course we all should run the drafts as short as we reasonably can to keep the machinery in proportion in its production, so on numbers varying from 12s to 20s, in the long run, the writer sticks to his stated drafts, 4 to 4.65.

As to the turns per inch in the roving, the article was written on a ⅞-inch to 1 inch staple, so Benjamin must have overlooked some parts of the article. Figure it out and see if the given turns per inch as shown in the article will not yet prove out a good standard, give it a good try-out that's the way to prove anything. Then come back to COTTON with the results. Contributor No. 14.

Plugging Up the Leaks.

EDITOR COTTON:

"It's not what we earn, it's what we save, that counts" is an oft-repeated remark, and it can be very suitably applied to our factories where supplies, oils, belting, etc., are expensive items. Take oil, for instance. If one would make a careful survey, it would be noticed how little of the great amount of oil usually applied really reaches the working parts for which it is intended. If the department heads would see that those consigned to the oiling duties would keep all oil holes, or channels meant to receive the lubricant, clear and free, the oil consumption would be greatly reduced.

Belting is another expensive detail. In many cases a lot of narrow width belting is used in the operation of knitting and sewing machines. Most of these machines have the same size drive pulleys on the shafting and the same size receiving pulley on the machine. Wouldn't all the belts be the same length in such cases? But how many take time to cut all these belts the same length? I have seen instances in which no uniform length was considered, and after cutting a length of belt, from two to three inches had to be cut off the belt before it would pull the machine. My suggestion would be to take a belt of the right length and make a standard length memo of all belts, as regards their size or length, for each particular machine, and cut them that length only as they are needed.

Let us take care of the small items of waste, as it's the small leaks that make expensive operation in any department, and by plugging up the leaks the profits from every department will show a surprising increase.

Bob (Iowa.)

How to Secure a Gloss.

EDITOR COTTON:

We desire to finish some thin dyed material of a construction similar to print cloth with a gloss on one side to be cut and made up later into certain articles of commerce. Unfortunately we have no friction calender in the plant, but we do have a three-bowled calender with one steel and two combination bowls on which we have rigged a device for gearing down the speed of the bottom bowl. The greatest amount of friction we are able to get by this method does not give us the amount of polish desired. Is there any substance which we could apply to the hot steel bowl that would aid in bringing up the polish of the surface of the cloth? L. D. (N. C.)

EDITOR COTTON:

L. D.'s query is rather difficult to answer inasmuch as we do not know how much friction he has on his bowls, or how much glaze or polish he wants, or whether the goods require to be finished stiff and hard or mellow and soft, or, what sizing, if any, he has in his goods.

We will assume, however, that his steel roller runs one and one-half times faster surface speed than his bottom combination roll and that his steel roller is as hot as steam, or gas, which is better, can make it. The goods must be starched when dry by one of the following combinations and thoroughly dried:

80 gallons of water;
80 pounds of corn or potato starch;
7 pounds palm oil.

Boil well and starch on engraved roll so as to get a good body of starch onto the goods, or run twice. Dry thoroughly, let the goods lie until cool and then damp thoroughly and lie one hour. Then calender four times through the calender on the same side, using a hot steel roll and a heavy set.

Another:

20 pounds corn or potato starch;
9 ounces rosin;
9 ounces tallow;
5 ounces Marseilles soap;
5 ounces spermaceti;
14 ounces wax (paraffin wax will answer)

Boil well with water making about 22 gallons of size. Dry, starch in the given combination, dry, damp well and calender all as described in the previous recipe.

We are inclined to think that L. D. did not use waxy or greasy matters enough on his goods, and perhaps he did not run them often enough through his calender; again, the goods, for glazing, must be heavily calendered.

W. B. (Maine.)

National Aniline & Chemical Company, 21 Burling Slip, New York City, has just issued a new booklet on the development of the American dyestuff industry, giving also some interesting information regarding "National" service and products.

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The Relation of the Harness Cam to the Shuttle.

EDITOR COTTON:

It may be of interest to the readers of your Practical Discussion Department to know just the nature of the calculations which it becomes necessary to perform when drafting up a set of cams to fit a certain sized shuttle. As this is a subject on which very little has been written it is my intention to go deeply enough into the detail connected therewith to enable the reader to understand the matter in a thorough fashion. From past experience I know that many, in fact the majority of foremen and superintendents (to say nothing of second hands of weaving) know nothing whatsoever of this important part of cam calculations and from actual observation I have seen the lack of this knowledge often turn out very disastrously.

The first item which it is necessary to ascertain when dealing with the matter of fitting the harness cam to the shuttle is the distance from the center of the auxiliary cam shaft to the center of the treadle ball, when the harness treadle is level. The correct method of obtaining this is shown in Fig. 1 which is a reproduction of a harness treadle on a small scale. The first measurement is that represented at the line AB which will be found to be four inches. The next measurement is the distance from the fulcrum of the harness treadle to the center of the treadle ball, which is represented by line CD and which will be found to be 9½ inches. The next item to be obtained is the distance from the fulcrum of the harness treadle to the point of connection with the harness which is represented by the line EF and is found to be 21½ inches. The treadle ball shown at G has a diameter of 2 inches.

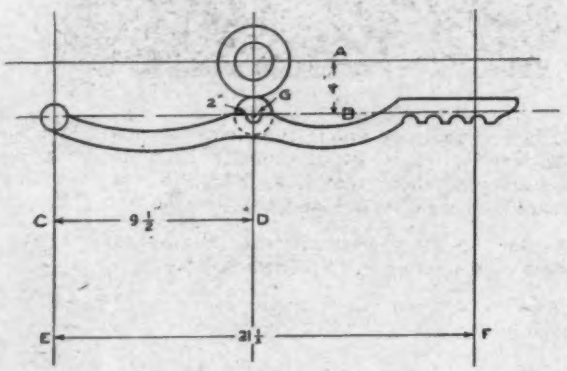

FIG. 1

Taking up Fig. 2, the first item to be found is the size of the shuttle which is found to be 1⅜ inches by 2 inches, or in other words, the shuttle being used is 1⅜ inches deep and 2 inches wide. One very important addition to this item is the allowance of ⅛ inch for clearance so that the upper part of the shed will not chafe on the shuttle as it passes to and fro across the lay. Another point where an allowance must be made is at H where ¼-inch or whatever may be the loss incurred from the lost motion due to the depth of the harness eye or heddle takes place.

The measurements necessary to be obtained now will be seen in Fig. 2 and may be obtained as follows: First measure the distance from the fell of the cloth to the first harness or put the crank shaft on front center and measure it from the face of the reed to the first harness as shown by line AB. Next, putting the crank shaft on back center, measure the distance from the fell of the cloth to the reed as shown by line CD. Now measure the distance from the fell of the cloth to the front wall of the shuttle with the shuttle against the reed and the loom on back center or subtract the width of the shuttle from line CD, as shown by line EF.

As all the necessary measurements have now been obtained we will proceed with the calculations, and the first

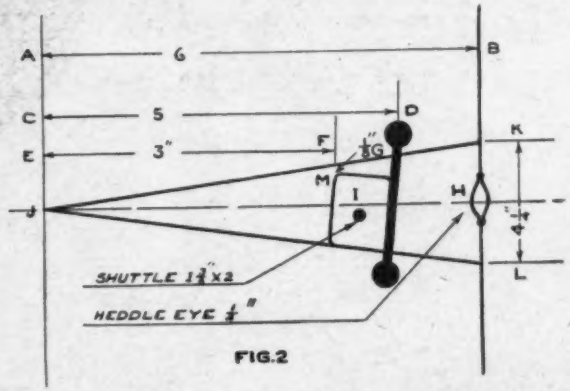

FIG. 2

one is the distance through which the first harness must travel in order to make a shed large enough to accommodate the size of the shuttle being used. To obtain this the mode of procedure is as follows:

Rule: Multiply the line AB by the depth of I, then add ⅛-inch for clearance. Divide this result by the length of line EF and to the final result add ¼ inch or the depth of the harness eye for lost motion. The answer will be the movement of the first harness.

$$\text{Example: } \frac{1.375 + .125 \times 6}{3} = 3 \text{ inches} + .25 = 3\tfrac{1}{4}$$

inches = the movement of the first harness.

Looking at the diagram shown in Fig. 3 it will easily be seen how to figure the movement of each succeeding harness. In this sketch it will be noted that the notches where the harness straps connect to the harness treadles from center to center are ½-inch apart and in figuring the movement of the second harness it will be necessary to add this distance to the line AB in Fig. 2, and then proceed as for the movement of the first harness.

$$\text{Example: } \frac{1.375 + .125 \times 6.5}{3} = 3.25 + .25 = 3.5$$

or 3½ inches = the movement of the second harness.

In order to find the movement of the third and fourth harness simply substitute the distance of the line AB, plus the two distances of two half-inches, or, to be exact, 7 inches in one case and 7½ inches in the other and proceed as before.

$$\text{Example: } \frac{1.375 + .125 \times 7}{3} = 3.5 + .25 = 3.75 \text{ or}$$

3¾ inches = the movement of the third harness.

$$\text{Example: } \frac{1.375 + .125 \times 7.5}{3} = 3.75 + .25 = 4$$

inches = the movement of the fourth harness.

We will now refer again to Fig. 3 and from the items there and the figures thus far obtained it will be a compara-

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tively easy matter to figure out the throw of each harness cam in succession as follows:

Rule: Multiply the movement of the first harness by the line IJ and divide the result by the line AB. The answer will be the throw of the first harness cam or the distance which the treadle ball moves at each rise and fall of the harness cam.

Example: $\frac{3.25 \times 9.5}{21.5} = 1.43$ or 1 7/16 inches = throw of first harness cam.

To find the throw of the second harness cam proceed as in finding the throw of the first harness cam, but in this case use the movement of the second harness and the length of the line CD.

Example: $\frac{3.5 \times 9.5}{21} = 1.58$ or 1 9/16 inches = throw of second harness cam.

To find the throw of the third and fourth harness cams proceed as before but use the movements of the third

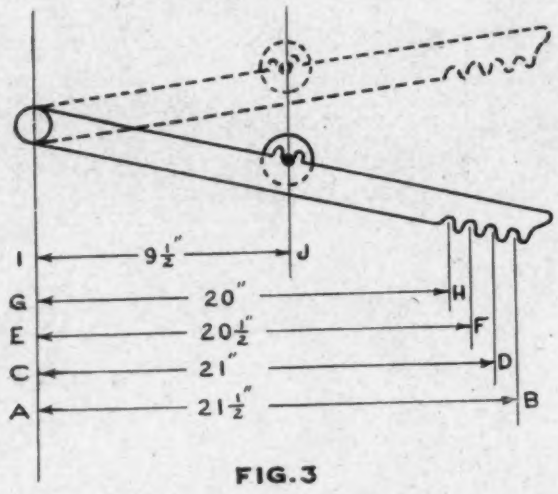

FIG. 3

and fourth harness and the lengths of the line EF and GH as divisors.

Take first the throw of the third harness cam.

Example: $\frac{3.75 \times 9.5}{20.5} = 1.75$ or 1¾ inches = throw of third harness cam.

Now comes the throw of the fourth harness cam.

Example: $\frac{4 \times 9.5}{20} = 1.9$ or 1⅞ inches = throw of fourth harness cam.

The last item to be obtained is the outside diameter of the harness cam and this may be secured as follows: Looking at Fig. 1, it will be noted that the length of line AB is 4 inches and that G has a diameter of 2 inches. To find the diameter of the first harness cam:

Rule: Subtract one-half the diameter of G from the length of the line AB and multiply the remainder by 2. Add to this the result of the throw of the first harness cam and the answer will be the outside diameter of the first cam.

Example:

$2 - 1 = 1$ inch.
$4 - 1 = 3$ inches.
$3 \times 2 = 6$ inches.
$6 + 1.43 = 7.43$ or
7 7/16 inches = outside diameter of first harness cam.

To find the outside diameter of the second, third and fourth harness cams proceed as before but take the throw of each cam then being figured.

Example:

$6 + 1.58 = 7.58$ or 7 9/16 = outside diam. of second harness cam.

$6 + 1.75 = 7.75$ or 7¾ = outside diam. of third harness cam.

$6 + 1.9 = 7.9$ or 7⅞ = outside diam. of fourth harness cam.

As these are all the measurements and items necessary to be obtained for the draftsman it will be very easy for any good man to draft a set of cams from the instructions and sketches given herein. Benjamin (Conn.)

A Mill Experience.

EDITOR COTTON:

The prize contest being run in COTTON is sure to prove a great benefit to many mill men. Why? Because COTTON enjoys the services of the best practical writers. Take a tip from your uncle "Wash," read COTTON, then read all the other textile publications; in these cannot be found the same interesting articles and practical letters as are found in COTTON. Therefore, every mill man should study every article, take it apart and examine it, read it twice so as to be sure to get all the points the writer tries to bring out.

After reading these letters and articles, mill men should try out some of the suggestions found therein. And then, just to make things interesting, after making tests from the suggestions, commend the writer or bring him to the "mourner's bench," as the results seem to warrant.

Speaking about the contest recently, a friend told me that, in his opinion, any one could increase production if they so desired by simply speeding up the machinery. Now how many others have this same opinion?

We must all admit that highly speeded machinery causes a more severe treatment to the cotton fiber. We must also grant that machinery can be speeded to a point where a loss results in production instead of a gain. It is easy to speed up machinery, but to do this and at the same time increase production is something else. COTTON'S contest asks for methods of securing a greater production of high quality, which is not so easy. There is no better teacher than personal experience and that is what I am going to give in this letter.

I once applied for a carding job in a northern mill and the man at the helm asked the same question COTTON does in this contest. He said, "Can you increase the production and at the same time improve the quality?" My answer was, "Yes."

The man looked surprised, and I am sure he expected me to answer in the negative. However, I must have convinced him by my confidence as I landed the job, with the understanding, of course, that I made good. It was agreed that my hands were not to be tied and that I could

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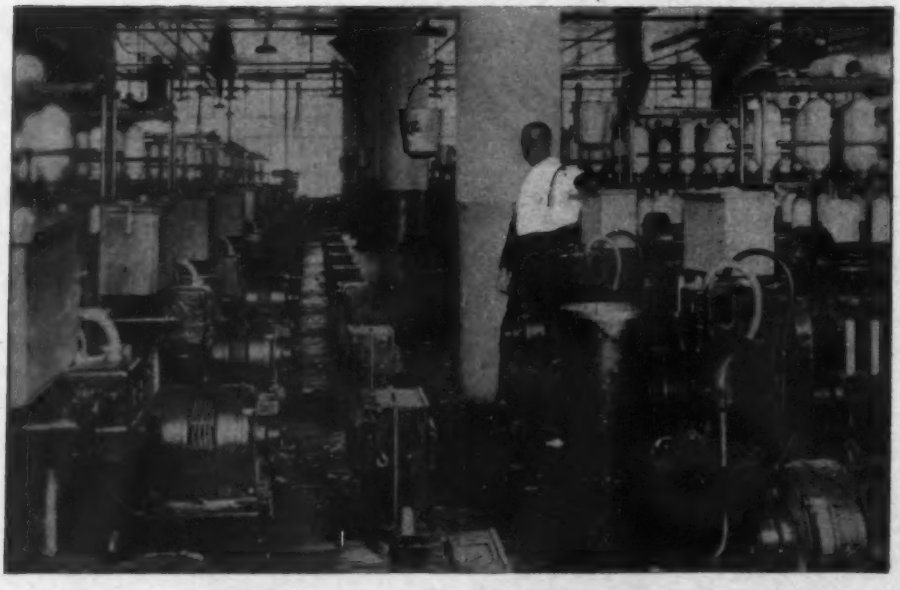

have anything within reason. What I did can be done by every mill man and similar results secured.

My first move was to look over the cards, which I found to be in good shape with the exception of the licker-ins, the condition of which was very bad. We had all the licker-ins re-covered. I knew there was only one way to increase the production and at the same time improve the quality and that was to stop the intermediate lapper. In other words, it was my intention to remove the severe treatment to which the cotton is subjected in most mills.

So after stopping the intermediate lapper I was able to take out two teeth of twist from each fly frame. I had 28 jacks and 192 spindles. There were only three doffers to handle 34,000 pounds of roving. We were spinning a six roving. Therefore many speeders were forced to stop at almost every doff because of the lack of doffers. There is where I found the greatest cause for the loss in production. I immediately hired six more doffers, so that I had nine doffers instead of three.

I next put up a hank board showing the numbers of the clocks and the number of hanks produced each day. This worked as an incentive and in a couple of weeks I turned off 42,000 pounds, which was 6,000 pounds more than was expected. The cost per pound was reduced from .0133 to .0098.

As stated, the foregoing is a practical experience and not guess work.

Contest Letter No. 54. Wash (Conn.)

The Road to Better Education.

EDITOR COTTON:

The past few years have been very busy ones in all lines. The farmer has received the highest prices for his products since the Civil War. Manufacturing plants have all made good profits. The laboring people have received big wages, in fact, higher than has ever before been known.

The old saying, "It is a long lane that never turns" seems to be very true. At the time this is written cotton is off from fifteen to eighteen cents per pound. Cotton mills are running short time and I have heard of several mills who have reduced wages. In a conversation with the superintendent of one of the best mills in this section last week, he informed me that he could not manufacture the goods called for by new contracts at the present scale of wages and make any profit at all. This is the general opinion of all mill men whom I have heard express themselves.

Now I, for one, am very sorry to see these conditions coming. I have been employed in the mills all my life, and at very low wages. For instance, doffers now make from $20.00 to $30.00 a week. I received $2.10 a week for the same work years ago. Personally, I prefer high prices: forty cent cotton and high wages. But there are many who will disagree with me, especially among the mill operatives. Just a few weeks ago I was talking to one of our weavers on this subject and she remarked that she would like to see everything cheap again. I hold her that I believed she was taking the wrong view of it, that it is better for us as it is. She replied that when she worked for $4.50 a week she could buy a good pair of shoes for $3.00. I then asked her what the same shoe would cost her now and she said $15.00. I tried to explain to her that when she drew $4.50 a week and paid $3.00 for shoes she had a balance of $1. 50, but now she makes about $30.00 a week and pays $15.00 for shoes, leaving a balance of $15.00.

We must admit that the people have not taken advantage of the opportunities afforded them in the past two or three years. The question is, are they to blame? In September, 1914, I went with a mill as foreman. This mill was running four days per week and had more help than was needed. I had been there only a few weeks when the mill was started on full time. One day there came to me a man in search of work. I told him that I had more help than I could use and, therefore, could not employ him. He replied that he had been to every mill in town in search of work and had found nothing to do. He said that he must have work as he had neither money nor anything to eat. He was willing to sweep or do any other work at any price. A few months later I noticed this same man working in another department of our mill at very good wages and as independent as could be.

The reason for this was that all the mills were running full time and most of them day and night. Consequently, help was short and every one was after it. When this man would leave his work at night he would meet some foreman from some other mill who would offer him more than he was getting and, therefore, he could afford to be independent, just as anyone can when they know they can secure employment elsewhere with as good or better wages. I have often said and wish to repeat here that the managers, superintendents and foremen are more to blame than the operatives. All the mills through this section operate on practically the same scale of wages and the people employed in these mills work for a living just as do the people in other lines of work. If the farmer's help came in contact every night with agents who tried to hire them by offering more wages, better treatment and a lot of other promises, it would be impossible for the farmer to make a crop.

I do not mean to say that I want people to come to my mill and have to stay there against their will. I have always made it a rule that if a hand does not suit me to get rid of him and those who are not satisfied at my mill are told to go where they will be satisfied and settle down. I do not wish them to remain when not satisfied, but with as many mills as they have to choose from, surely they could find some place where they would be satisfied if let alone.

There are a number of reasons why the help should not move about, but I will mention only three. First, the expense of moving. There is not one family in one hundred who ever makes enough on the promises of better wages, etc., to cover the cost of moving and their lost time. Second, they have children at work and satisfied. They are accustomed to the class of work they are running and when moved to another plant they become disorganized. The spinners will invariably come in from the first day's work and complain that they cannot run the new work, and at least one half of the families who make such moves are willing to tear up and move again. If the mill people had the money in their pockets which they have spent for wagons, trucks, railroad fares, etc., during the past four years, a few months of short time now would worry them but little. Third, and the most important in my mind, is the education of their children. I have had the government inspector in my office and have listened to the questions asked the children applying for permits to work in the mills. A fifteen year old girl or boy will be asked what grade he or she

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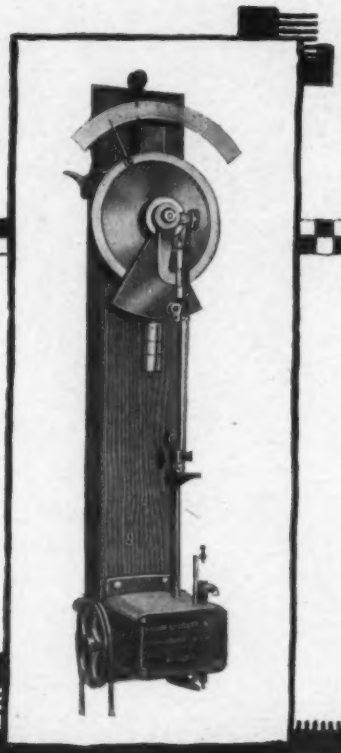

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had attained in school, and a very few will answer sixth, seventh or eighth grade. The others second, third and fourth. This is true of every instance I have noticed, and the inspector told me that at practically every mill she visits the children who are in the sixth, seventh and eighth grades at the age mentioned are the ones who have been brought up at that particular place, attending only one school, while the others are the moving class and very often name two or three schools which they have attended during one term only a few weeks at a time at as many different mills. This one reason alone, I think, is sufficient to show that it is better to settle down.

In the past four or five years it has not required very close management to make money. But now, as times seem to be returning to normal, we must get back to real management in order to show dividends. The stockholders have been receiving these good dividends and hardly any of them are practical men. For this reason, it will be quite a task to explain to them why a good showing cannot be made. Of course, no reasonable man will expect to make the profit in the future that he has made in the past.

It is my opinion that we will see very different conditions in the near future, so let's get down to real manufacturing again. Give the help good homes, good treatment and all the wages we possibly can, then let them alone. If this is done, everybody will have better help and plenty of it.

Superintendent (Ga.)

The Results of a Foremen's Conference.

EDITOR COTTON:

We had our first meeting last week of the open evening session for the overseers and second hands of the mill, including the clerks in the office. Before starting the discussion, the manager said, "We have had something come up with Tom this week, about discharging hands, that made it important that these meetings should begin at once." A smile went over the room, as all the men knew that Tom had not kept his grouch to himself.

"On Monday," continued the manager, "a little trouble that Tom had been finding in the spinning room, came to a dispute almost as soon as the power started after the dinner hour. Mary Listover walked up to the desk and refused to start her machines. I know that she has been giving lots of trouble," the manager added, "and Tom was all right in giving her the time slip, but, he had no authority to add that she would have to wait, before getting it, until he was ready to give it to her."

"She at once threw up her head and walked out of the room saying that she would have her pay at once, and Tom has regretted five dollars worth on his pay envelope this Friday, and will have to regret the same amount next Friday, that she secured a lawyer to collect."

When the laughing died down in which Tom joined with rather poor grace, the manager continued, "That is the main reason we have called this meeting together, and we wish it open to all kinds of questions. We have rules, some printed and some written in the books that we give all the overseers, but I am afraid that some of you do not understand what the rules mean, and are afraid to ask for the proper explanation of what seems blind.

"We know that if the men in charge of the rooms do not know, that the help cannot, and we wish to have every one employed in the plant feel that the rules are made to help rather than to hinder the proper doing of the work. They are not intended to make any person feel that he is always in the face of a 'Don't,' but that we all here are in accord to make a large production and the perfect safety of each operative the ultimate end of the rules."

After a whispered discussion, and one or two audible suggestions John rose and said, "I make the motion that the orders now posted in the plant be taken up in detail at these meetings, and if there is any question about their meaning, that the wording be changed, if need be, to make them plainer."

This seemed to meet the approval of all of the men present, and one of the clerks was sent to bring the printed instructions about running time, fire protection, use of lights and other details.

The carding overseer rose and said, "Before we start I wish to apologize for something that happened when we had that accident to the lighting system last week. I did not light the pilot lights of the gas, when the clouds came up, and when the lights went out, did not hold the help in the room until something was done about shutting down the power."

The manager rose, "There was never anything more foolish than what occurred that afternoon. Just because some of you men were lazy, the help were afraid and we were only prevented by sheer luck from what might have been a serious accident. When the lights went out because a fuse blowed from lightning getting by the arrester, the help threw off the machines in all the rooms. You must have known that the water wheels could not be shut down in a second, and that the shafting would seriously overspeed unless the governor exercised suitable control. It helps some to have John acknowledge that he was wrong, but it does not make the matter any more explainable with the rest."

After an outspoken discussion, the following agreement about orders was drawn up:

First: All orders now in force are to be explained by the overseers of each room to the help, and any questions that they cannot answer are to be brought up in the meeting next Friday night.

Second: Before any new order is posted to be carried out, it shall be circulated among all the rooms, and, if any wording seems hard to understand, it is to be changed so as to be plain to every hand.

Third: It will be the practice in future orders to have them talked over in each room, until the help understand the reason for a new rule or a change in an old one.

Fourth: A question box is to be placed in each entry, and any of the help that have any suggestion to make will be encouraged to place a written statement in the box. These are to be taken up at the next overseers meeting, and thoroughly discussed, and, if accepted, are to be used either in changing a rule now in force, or in making a new rule to cover the point raised. A. H. G. (Conn..)

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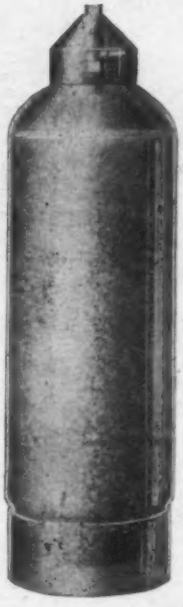

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We Make a Specialty of the Textile Business.

Exposition Notes.

(*Continued from page* 33.)

of the Rome Soap Mfg. Co., Rome, N. Y., was another soap man who was at the Show.

W. Scott Alter was representing the American Tool Works Company of Cincinnati. He was the elongated gentleman with the contagious smile. Also the mostache.

Cassius may have had a lean and hungry look in the Roman days of old, but such was not the case with Elliott A. Allen, of the Allen Spindle Corporation, who was at the Show. Mr. Allen has acquired considerable weight since he got into the spindle game. His business, like his spindles, seems to run smoothly and without friction. Gib Slaughter helps in this work.

Did you ever see such an industrious bunch as the one around the exhibit of the Lovingood Company? This space was chuck full of articles for the shipping room, etc., which this company handles in the South and ample representation was on hand to demonstrate each and every feature. Alvin Lovingood, president, and James A. Greer, secretary and treasurer, from Atlanta, were present. R. B. Livingston, sales manager of the Signode System, Inc., from Chicago, was also there. And—the "thrill of a lifetime" came when the girls were taken for a ride on the Revolvator by H. M. Satterfield, Carolina salesman for the company.

A full size house was on exhibit on the stage. This was one of the Minter type, manufactured by the Minter Homes Company, of Greenville. This model was furnished beautifully and was a mecca for the lady visitors, particularly. In this connection, it might be of interest that the Minter Company is erecting a number of these houses for the Brandon Mills, at Greenville.

J. Kirk Rowell Co., of Atlanta, had an exhibit of the various products which they handle in the South and had a number of people on hand to demonstrate them. These included Carl Larson, western manager for the American Kron Scale, F. V. Atlee, district manager of that organization, F. I. Lay and A. I. Bennett from the Atlanta office of the Rowell Company, W. P. T. Mills, from its Charlotte branch, E. G. Beinhart, from the H. Zering Mfg. Co., of Cincinnati, and J. Kirk Rowell himself.

J. S. Cothran, southern agent for the Link-Belt Co., and several other firms, spent the week at the Show meeting old friends.

R. E. MacCausland, field manager of the Barber-Colman Company, came down to the Show. He was another who participated in that foursome and it may be said that the score card generally showed him to bring in the lowest score. N. H. Alford, from the Greenville office, was also present and was included in the golf hostilities. J. H. Spencer, southern manager, was at the Show, of course, and the "good place to sit down" was certainly provided.

Oh, girls, wasn't he the handsomest man! We mean George D. Carter, who attended the exhibit of the Taylor Instrument Companies. H. M. Barker, manager of the Atlanta office, was also at this booth demonstrating the various recording instruments on display.

Harold H. Baker was a visitor. Mr. Baker, who has been manager of the Thomson (Ga.) Division of the Couch mills, has been promoted to general manager of all the Couch interests.

Capt. James H. Maxwell, the popular southern manager for the Keever Starch Company, had charge of his company's attractive booth on the second floor. He was kept busy shaking hands with friends and acquaintances and explaining the advantages of the products which he handles in the South.

Wilkins Cagle was in charge of the exhibit of Graton & Knight, Inc., and was handing out some useful bill folders.

William D. Calley was at the booth of David Lupton's Sons Company. Mr. Calley is manager of the recently opened southern office of this company at Atlanta. C. F. P. Buckwalter, from the Philadelphia office, was another representative of the Lupton organization who was present.

Greenville Belting Company, Greenville, S. C., was at the Show in a large majority. M. C. Sanders, with his contagious optimism and smile, was on hand greeting his friends and associated with him at this exhibit were R. E. Johnson, W. T. Johnson and C. H. Mayhew, Jr.

E. S. Player, manufacturers' agent, of Greenville, had an entire section on the second floor wherein was a complete exhibit of the products of several of the firms which he represents. At this display were representatives of each company who demonstrated their respective products. Among these was Mr. French, of the Standard Conveyor Company, whose model conveyor attracted the attention of all passersby, as did the "Scoop" conveyor of the Portable Machinery Co., which was in operation at this space.

W. S. Petty was at the space of the American Laundry Machinery Company renewing old acquaintances and making new ones. Mr. Petty needs no introduction here as he is quite well known to southern mill men. H. G. Mayer and Neil M. Walker were other American Laundry Machinery Company representatives who seen at the Show.

A. P. Aldrich, Jr., of the Aldrich Machine Works, Greenwood, S. C., was in charge of the exhibit of his company. Associated with him in this connection was J. J. Torpey, representing the U. S. Ball Bearing Company. Mrs. Aldrich was also there.

George W. Pritchett, manager, and H. E. Matthews, engineer, of the Charlotte office of the Morse Chain Company, were at this company's exhibit throughout the week.

F. R. Chadwick, representing Oxweld products, with headquarters in the Latta Arcade, at Charlotte, N. C., was among those present during the week.

Winston D. Adams, of Charlotte, N. C., secretary of the American Cotton Manufacturers Association, came over to spend a day at the Show.

Monroe, Ga., was represented at Greenville by E. S. Tichenor, president Walton Cotton Mills, C. M. Walker, president and J. Wheeler Mears, superintendent of the Monroe Cotton Mills.

C. C. Harding, the popular southern representative of the Permutit Company, who had charge of that company's booth at the Show, expressed himself as being highly pleased with this year's exposition. He stated that he considered the decorations most tasty, and that the management, who had attended to every little thing, was to be congratulated.

Al G. Smith, of the Corn Products Refining bunch was giving out a little poem on "Sand." Mr. Smith was very much in evidence and there were several who heard the famous sneeze for the first time at this year's Show.

S K F Industries had at the Show the following representatives: R. C. Byler, E. M. Potter, Oliver Stangland, Worrell H. Holby. Mrs. Holby was also present.

Buck Lattimore was there greeting friends and custo-

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A permanent white without weakening; softness and elasticity preserved.

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mers. The Padgetts were also present for Swan & Finch and N. W. McGrew, recently appointed textile lubrication engineer, spent the week in Greenville. The last named gentlemen was included in the brilliant foursome at the Sans Souci Country Club. While not on the links, Mr. McGrew was kept busy at the S. & F. booth explaining the advantages of Slo-Flo and other lubricants on textile machinery.

H. Newton Marshall, president of the company which bears his name, was at the Show, as was D. R. Hall, manager of the Atlanta office of the company. The exhibit of this company included photographs and lists of the mills which have been painted by this well known firm of painting contractors. The southern office was recently opened in Atlanta under Mr. Hall to give the best possible service to the clients of the organization located in the South.

J. Walter Hames was around greeting friends and looking the place over. Mr. Hames is superintendent of the Exposition Cotton Mills at Atlanta. O. G. Murphy, from the Shawmut (Ala.) Mill, was also there. So was W. A. Black, of the Beaumont Mills, Spartanburg. Those who were present at the Spartanburg meeting of the Southern Textile Association will recall that Mr. Black was one of those who provided such excellent entertainment at Spartanburg.

C. B. Seal, exponent of Atlanta and director of the A. French Textile School at Georgia Tech, had a booth in juxtaposition with that of Foote & Davies of Atlanta, presided over by Karl Johnson. These gentlemen took delight in telling of incidents in the life of Mr. Cox, who was with Johnson in the F. & D. Booth.

W. W. Foster, the genial representative of the Patterson-Sargent Company, was about the Show with a beaming optimism concerning conditions. Mr. Foster has for some time been devoting himself to the retail trade on the paints of his company but has lately gone into the industrial end exclusively, calling on the textile mills among others. He has a line of mill and all kinds of industrial paints and hands out a cheery word as to what we will have coming to us in the future.

H. O. Kaufman, of the Philadelphia Drying Machinery Company, came down from Philadelphia as a one-day visitor to the Show. He is in the South looking over the field for his products.

Sure enough, a real "Kool Kosy Korner" was provided by the Hunter Manufacturing and Commission Company, but "Bob" Bowe wasn't there. A. Culberson, however, was present greeting the friends and customers of this organization.

Howard P. Park, president of the Park Cotton Mills, La Grange, Ga., was at the Show as was a large delegation from the La Grange district.

The Bahans—"Big George" and W. H. Jr.—were in and out of the exhibit at the Bahan Textile Machinery Company at intervals during the week.

To the Screw Machine Products Corporation, of Providence, R. I., go the thanks of a number of the exhibitors for the courtesy of that organization in installing in many of the booths the "Select-O-Phone" system of intercommunication, also putting stations in the managerial offices of the building. This proved a very convenient asset in communicating with the officers in charge, and it was really nice to be able to "ring up" a fellow exhibitor by this system. H. M. Mays, from the Providence office of the company, was in attendance.

E. A. Terrell, president of the Terrell Machine Co., Charlotte, N. C., was on hand during the week, demonstrating the Utsmann quill cleaner and other features in the booth of his company, and meeting old friends. He also showed a brand new bobbin cleaner with some exclusive features.

An event which did not really receive the attention and attendance it merited was the industrial lighting exhibition which was conducted in a portable tent located on Main Street near the Ottaray Hotel. Practical demonstrations were given every afternoon at 3 o'clock and every evening at 8 o'clock. These were held under the supervision of A. L. Powell, of the Edison Lamp Works of the General Electric Company. Mr. Powell gave at each demonstration a short, practical and easily understandable talk which furnished convincing proof of the necessity for correct illumination in industrial plants. The location of this exhibition and the fact that this was its first occurence doubtless accounts for the small attendance, but it is to be hoped, if this plan is carried out at the next Exposition more will take it in.

Fred C. Poley was at the Show, in the booth of the American Scrubbing Equipment Company, along with J. W. Farris, Jr., and Reuben Finnell. Mr. Poley was recently appointed district manager for this company's products, covering Georgia, Alabama and Florida. His headquarters are in Atlanta.

Major R. W. Alger, district manager for the southern department of the H. K. Ferguson Company, with headquarters at 815 Austell Building, Atlanta, was in attendance during the week. The southern department of the Ferguson Company, opened September 1, provides a means for immediate service by this firm of engineers and builders to their clients in the South. All work located in the territory handled by this southern department will be direct with the Atlanta office.

L. H. Butler, advertising manager of the H. K. Ferguson Company, had charge of their booth at the Show. This company plans for the application of better designs to standard building and to match and excel the highest standards of special work. "A good job done on time" is a good motto which they aim to carry out, and usually succeed in living up to. The men of their organization are well capacitated to handle any kind of work. The firm are engineers and builders also. They take a plant and do the engineering work, the construction, and in some cases have carried the work on through even to the installing of the machinery. Mr. Butler had on display a standard model No. 3 building, which provides maximum lighting and adequate ventilation. It is provided with the V-type monitor and has the interior drainage feature.

Among the lighting experts who were at the Show were W. E. Trittipo, of the Ivanhoe Division of the General Electric Company, E. F. Baesel, of the Buckeye Division, F. E. Kopecky of the Shelby Division, and W. E. White of the Fostoria Division. These men were connected with the booth of the National Lamp Works, which was under the supervision of James M. Ketch, district illuminating engineer. A. L. Arenberg, in charge of the exhibit of the Central Electric Company, was another expert on lighting subjects who was present.

A White Hickory motor truck was placed on exhibition in the driveway in front of Textile Hall and demonstrators were on hand to explain the adaptability of this truck to

cotton mill use. A. B. Carter is the textile representative for this company.

F. A. Wedd, from the general offices at Wilmington, had charge of the exhibit of the Joseph A. Vogel Company, and was showing a line of automatic, frost-proof closets, automatic village closets and automatic closets for schools, mill village dwellings and public comfort stations.

Frank W. Gurry, president of the Eatonton (Ga.) Cotton Mills, was a visitor to the Show during the week. He was accompanied by Mrs. Gurry.

Yancey L. Yon, formerly of the 30th Division and later connected with the Riverside and Dan River Cotton Mills, but now handling the lines represented by A. B. Carter, of Greenville, was at the Show.

A. F. MacIntyre, the agent of the Fulton Bag & Cotton Mills, Atlanta, was at Greenville during the week meeting friends and renewing acquaintances.

Robert J. Freitag, of the Steel Heddle Mfg. Co., Philadelphia, Pa., spent part of the week at the exhibit of his company, in company with Hampton Smith, southern agent.

La Grange (Ga.) Mills sent two relays of men to the Show in two special pullman cars. Many other southern mill towns were equally well represented.

Edward B. Smith, of the Whitinsville Spinning Ring Co., Whitinsville, Mass., and well known in the southern field, was among the New Englanders at the Show. He advises that this company is building an addition to its shop which he expects to be ready for operation about April 1921. This addition will allow an increase in capacity of around 25 per cent. Mr. Smith further advises that because of improved machinery in the cast-iron ring holder department, the capacity increase will be more than 100 per cent.

A comprehensive display of shipping room supplies, including stencil machines, liquid glue, scales, floor trucks, box strapping, etc., was included in the exhibit of J. R. Regnas & Co., of Atlanta. Those who gave capable and ready demonstration of the features in this exhibit included T. H. Webb, H. C. Tuttle and W. E. Close.

Jos. H. Bennis, vice-president and secretary of the New York & New Jersey Lubricant Company, spent the entire week at this company's exhibit. He was justly proud of the large number of exhibits that were lubricated by "Non-Fluid" oil.

Havila Burton Taylor, slperintendent of the cotton department of the Pacific Mills at Lawrence, Mass., probably represented the extreme north-east among the mill men present, while Texas on the south-west represented the other extreme with Manager Herbert Jones of Post City, Superintendent D. H. Poole of Serman and others.

A plant for the dyeing and bleaching, in skein, of cotton, wool and silk for effect threads has been established by Habersham King, Jr., at 4 and 6 North Butler St., Atlanta. Mr. King has had eighteen years experience in this line, having been until recently connected with the California Cotton Mills at Oakland, Calif., and other textile establishments in a practical capacity. He states that yarns dyed or bleached at his plant will be delivered either in skein or in tube and guarantees the delivery of the same yardage as received. Dyed effect threads are fast to bleaching.

Genius has a twin brother whose name is patience.

Cotton dyers and others engaged in coloring cottons will be interested in having a copy of "Dyers' Formulae," just issued by the National Aniline & Chemical Co., Inc., and which gives in detail the approved recipes for matching the standard shades as shown in the Fall, 1920, color card recently issued by the Textile Color Card Association. There are 34 cotton recipes which, together with the dyeing details, form a valuable dyeing compendium of fashionable and seasonable shades. Besides the series of cotton dyeing recipes there are included the compounding formulae for silk, wool, and leather. The volume comprises 24 pages, with several blank pages for notes and memoranda. It is bound in a substantial cover and is of a size convenient for both the desk and the pocket. Copies may be obtained without cost from any of the offices of the National Company.

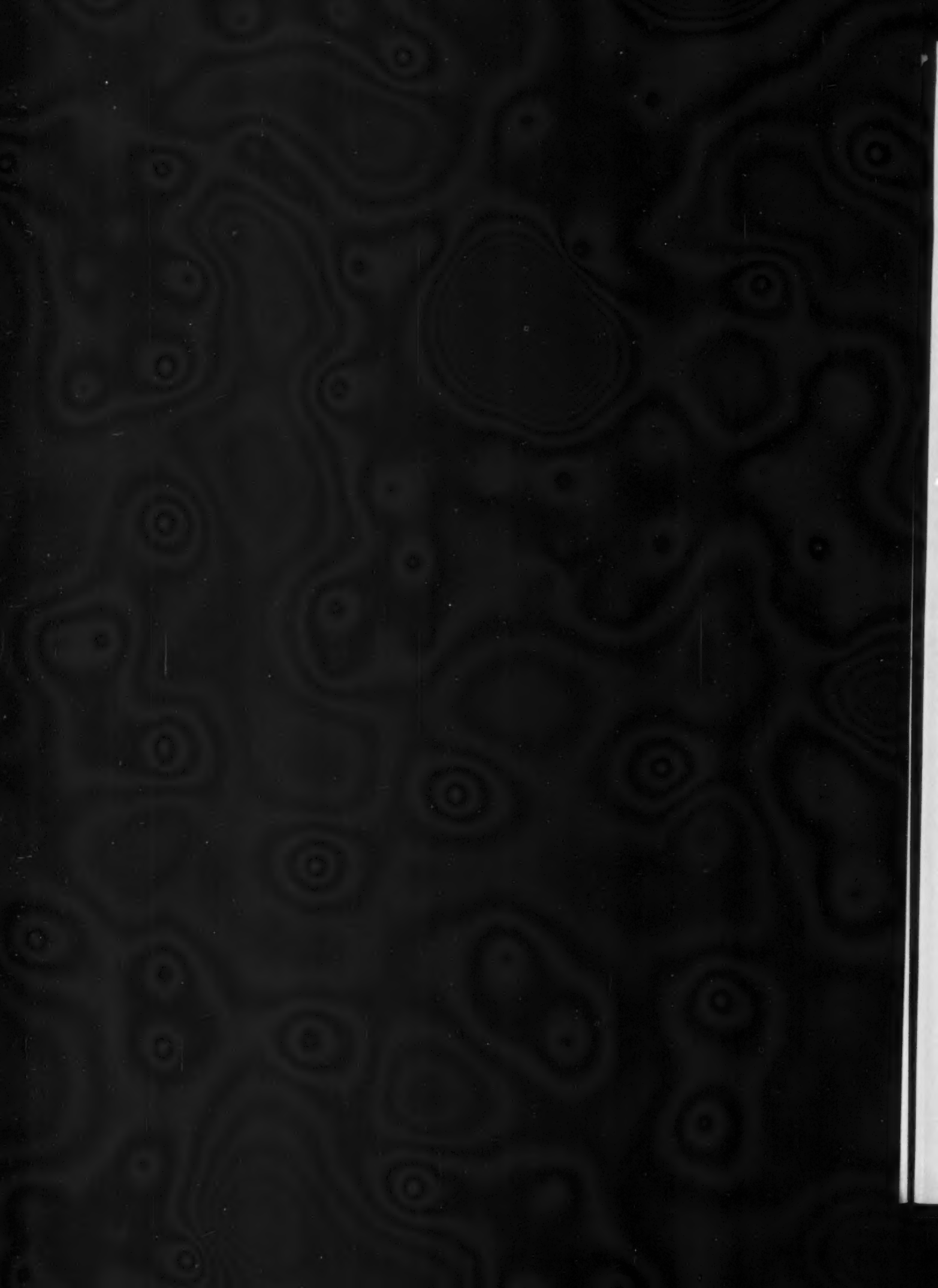
Fafnir Bearing Company, New Britain, Conn., has issued a well arranged booklet of 70 pages descriptive of the ball bearings manufactured by this company. The manufacture of the different types and the varied utility of these bearings are discussed. Different types of closures in which they may be used are shown and the method of mounting them is discussed. A number of examples of their applicability to various types of machines are given, and it is indicated how, in each specific case, the use of ball bearings has reduced the arch enemy of efficiency in machine operation—friction. The booklet may be had upon request.

Link-Belt Company, 910 South Michigan Ave., Chicago, has published an engineering data book on the use of their roller chain as a means of power transmission. This is a 78-page booklet and shows photographs of roller chain drives operating motor trucks, cotton gins, industrial locomotives and other equipment. It is designed to be a handbook of exceptional value to every power transmission engineer and contains tables from which almost anyone can select the proper size of chain and sprocket wheels to result in the best driving arrangement. Copies can be secured upon request.

The New York Textile Traffic Bureau has been organized with temporary quarters at 35 Nassau Street, New York City, in the care of Samuel M. Fisher, secretary and treasurer, and the permanent quarters will be from August 1st on, at 291 Broadway, New York City.

The aims of the organization are first to assist by personal contact, to relieve the present freight congestion at break-up and transfer points, and bring goods to their destination. At the same time they will try to immediately institute a system of combination of full carload shipments. And in addition to this, this organization will check up the rates as well as the freight bills of its members. In other words, this Bureau will more or less look after the freight problems of its membership on such shipments as originate south and go to New York, New Jersey and Pennsylvania.

Self-control is the very first step which must be taken by all who would attain leadership in any worthy undertaking.



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The Flatlock Seam is one of the greatest selling points knit underwear can possess.

Compare the illustrations—you can see that the Flatlock Seam is a *handsome* seam. It lies smooth and flat, without ridge or welt to cause discomfort to the wearer—it is no thicker than the fabric itself. Besides, it is a locked seam and cannot rip or ravel and is stronger than the fabric of the garment.

Our demonstration offer is open to manufacturers not using the Flatlock machine. Information regarding this will be sent on request.

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The Knitting Machine Thread Regulator

BY WILLIAM DAVIS, M.A.

The question of the regulation of the thread on knitting machines is one which has received considerable attention at the hands of inventors for a very long period and the problem may be justly regarded as having several sides to it. One of the chief problems in connection with the yarn feed is to stop the machine before the broken thread has time to take its full effect by pressing the material off the needles; in the case of circular machines this question is of special importance on account of the limitations imposed on the construction of this type of mechanism. Part of the frame is out of the line of vision of the operator and the thread breaks and presses off before the most vigilant machine minder can take action by stopping the machine. In the newest machines of circular character, the stop motion has been perfected to such an extent that it is now said to be difficult to keep the machine running, it stops for a knot in the yarn or a hole in the fabric, as well as the more general emergency of a broken thread.

On flat machines of the Cotton's Patent class, the thread stop motion has not been widely adopted, according to the experience of the writer, for it is found that frequent stoppage of the machine considerably retards production. The whole machine being in full view of the operator, she can use her discretion as to whether it is worth while stopping the frame. Some defects which might cause the frame to stop with an automatic motion can be easily remedied by the worker when the frame is in work, for in the case of a multi-division garment machine of the type under consideration, a stoppage means that 8 to 12 garments are being suspended in work and the frame must be kept going to the fullest extent possible. This is not to infer that stop motions on such frames have not been invented for very efficient devices have been originated, but it is found that in general, where the workers are sufficiently skilled and well trained, defects are remedied without stopping the machine and a press-off is rapidly run on again by the worker whenever this occurs.

It has been found in practice that 90 per cent of press-offs in fabric are due to one or other of the well known defects in winding and various precautions have been taken by enterprising firms to have these remedied. In the first place it has been found that the operation of winding has too often been regarded as of little importance and has been entrusted to the most inexperienced workers in the factory, being in too many cases relegated to the learners as their first job on entering the knitting mill. It would be difficult to compute the waste incurred annually by these yarn winder operators and when a check was put on their depredations, they promptly fell into a way of concealing the waste material about their persons and getting rid of it outside the mill premises. When yarns rose to such high prices, manufacturers who had been tolerant of the matter previously suddenly became alive to the enormous waste and one step taken by many was to raise the wages of the winding machine workers so that it was raised to a status equal to minding the knitting frames and a great improvement at once manifested itself. It was found that the augmented output and higher standard of work amply repaid the manufacturer for his increased outlay in respect of enhanced wages.

Of-course the chief defect of the juvenile winders for knitting frames is the tying of knots when joining up a new hank of yarn. Many a knot which might pass unnoticed in the weaving loom will not pass muster in the knitting machine, especially if the guage is medium to fine. The knot must be perfectly formed and small in size with short ends if it is to be sure of passing successfully through the eye of the thread carrier or if it has to be sunk between the frame needles without damaging the machine parts. All this is bad enough, but most of these defects can be remedied by the fabric repairer; more serious blemishes are caused by the yarns reaching the fabric than when it comes to grief somewhere between the thread guide and the machine needles. This takes place in connection with the catching of knots and yarn obstructions in the eye of the thread guide whereby the tension of the thread is momentarily tightened and this finds an instant reflection in the quality of the fabric produced. The minutest tightening of the thread even for a few inches or stiches shows itself at once in the form of contracted loops, whilst too free a feed for the yarn gives a series of elongated loops in the fabric. From these considerations it will be evident that many manufacturers steer clear of winding in factory altogether and where they buy their yarns from the spinner, they stipulate that they shall be delivered in a form which will be most suitable for working on the knitting machine. Most firms however find it essential to install a certain number of winding machines, for it seldom happens that all yarns are delivered in the form of cops or cheeses especially in the thicker woolen varieties and the manufacturer has, perforce, to undertake the winding himself or do without the necessary materials. Most spinners supply their yarns to widely different branches of the trade and to deliver yarns wound on packages equally suitable for every branch is often not practicable. For weaving the most suitable form is the small pirn which will allow of its being inserted in a shuttle, in other branches a medium size package is most useful, whilst for purposes of knitting on most kinds of machines, the aim is o have as large a weight of material as possible placed on the bobbin, as this causes the least number of stoppages to replace threads.

Thus it is that for most machines some form of mechanism is necessary to regulate the thread, first, to ensure that in the case of breakage the machine will be brought to a standstill before a press-off of the fabric occurs. This in most machines is termed the stop motion and is generally constructed in such a way that the yarn when in work is made to hold up a certain lever and when the yarn breaks this lever drops and makes contact with the knocking off mechanism of the machine so as to cause instant stoppage. In more precise machines this operation is carried a stage further and in addition to stopping the machine when the thread breaks, it provides means for neutralising variations in yarn delivery which occur as the yarn unwinds itself from the yarn package. In a large package the thread comes more easily off the nose of the bobbin that from the part further up, also when the yarn is being taken from an

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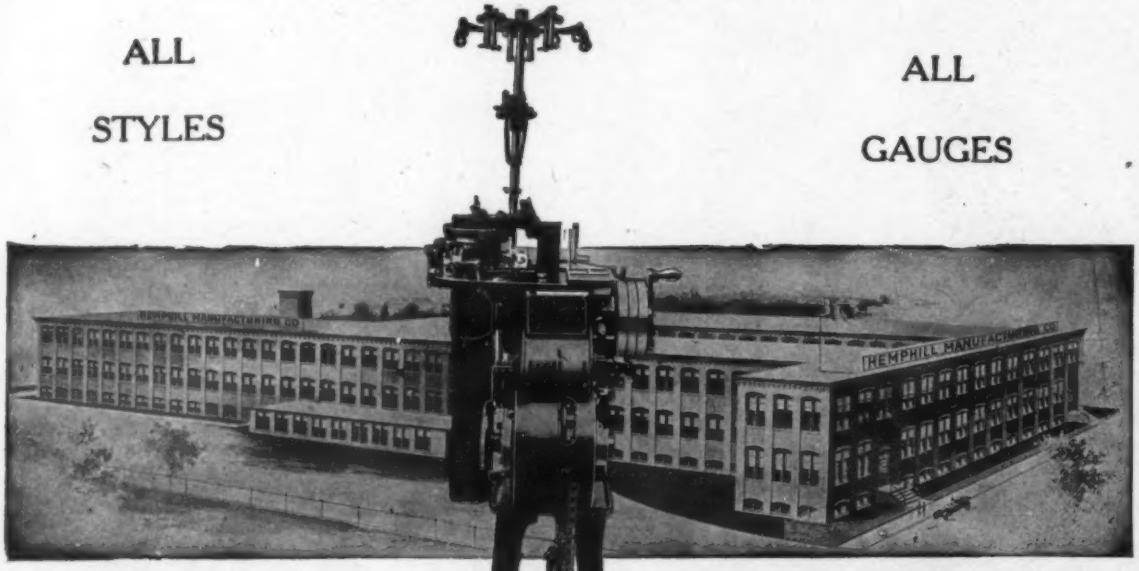

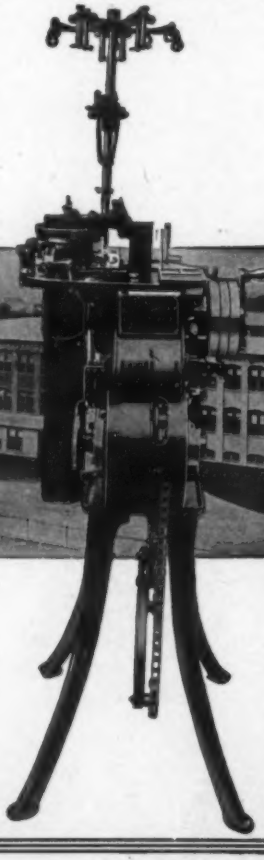

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emptying bobbin there is a greater resistance to encounter owing to friction against the bare bobbin. Further we have a series of minute variations of tension which occur through the thread coming into contact with minor irregularities which occur on the most perfectly wound package. These appear to be minor matters, but in the case of the knit goods nothing relating to the tension of the thread is too small to be taken careful note of as therein lies the secret of successful cover on the knitted fabric.

The character of the knitted fabric as regards regularity of loop is largely dependant on the steady feed of the thread to the needles at an absolutely even tension, a varying tension is at once displayed in a varying size of loop. To neutralize these minor irregularities, most machines have added an arrangement whereby the thread is made to travel over a larger distance before reaching the needles. That is the space between the bobbin as the feeding agent of the yarn and the needles as the points where the loops are formed is made as large as possible, so that by the time the thread reaches the needles minor variations in tensions are completely negatived and the yarn is fed "dead" into the needles. In one well known make of machine the thread is made to travel to a height of over one yard where it passes over a series of wire levers which actuate the stop motion. This distance gives two advantages, it effectively kills all variations in tension long before the thread reaches the needles, and secondly it gives the thread yarn stop motion adequate time to bring the machine to a standstill before a press-off of loops takes place. One disadvantage of the long distance yarn feed is that when breakage occurs, the upper erection is too far removed from the worker and recourse is had to a rod to replace the thread in its working points.

Figure 1 gives a view of a type of yarn regulator which has been adopted on the well known French or German circular frame employing the spring or bearded needle. This regulator has the advantage that it effectively takes out irregularities of tension and at the same time measures the yarn to the needles according to the tightness or slackness of the texture desired. It is also an advantage to have it act in a short space where all factors are perfectly under the control of the worker's hand. The mechanical details and method of operation will be evident from an examination of the sketch where the needles of the frame are represented by N, these being arranged in a circle and revolving when the machine is set in motion. The movement of the needles is towards the left in the direction of the arrow, and the driving wheel DW gears into the needle stems. When the needles move round, this at once causes the wheel DW to rotate in a clockwise direction as shown by the arrow and this in turn gears into a pinion which causes the wheel M on the same stud to rotate in contra-clockwise direction. Above M is noted the wheel L which gears into M, but differs from the other wheels by being capable of adjustment by means of a star wheel SW above on which works a strong control spring P in the circum-

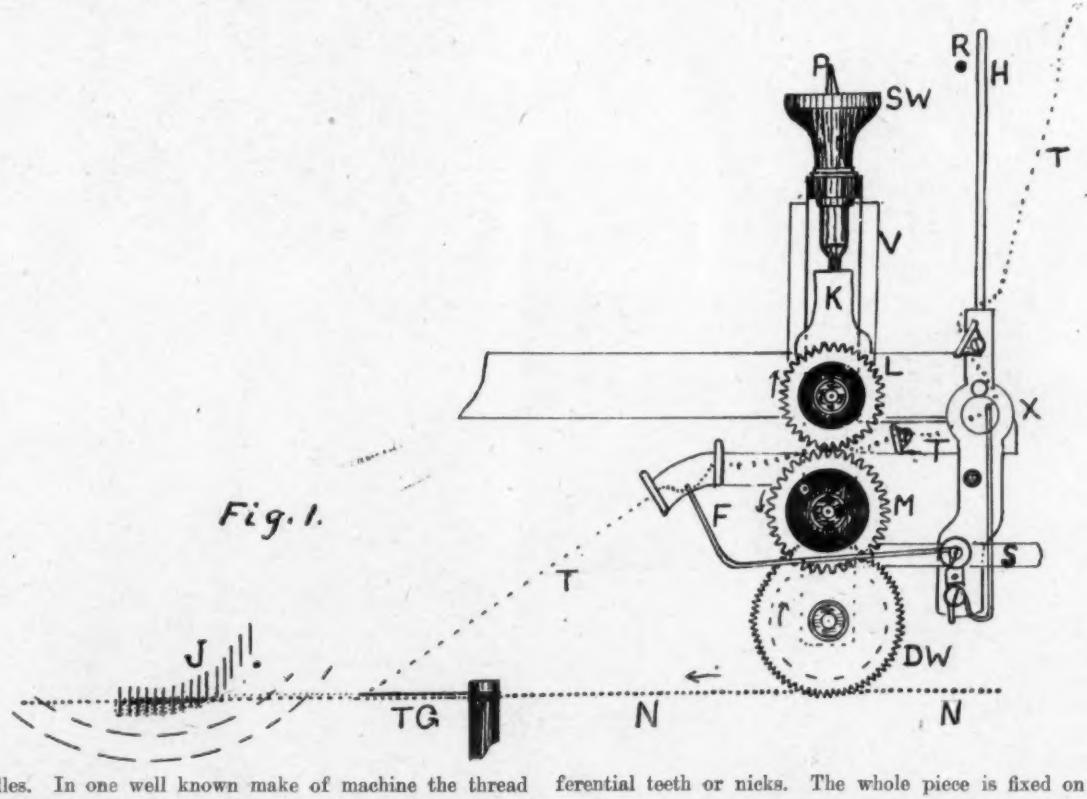

Fig. 1.

ferential teeth or nicks. The whole piece is fixed on a bracket V and the part K is moved up and down with its wheel L according to the adjustment required for the thread marked T, which can be noted issuing from the bobbin in a dotted line. The function of the train of wheels is to take away any small jerkiness which may be on the thread as it is drawn from the spool or bobbin this being effectively neutralized as it passes between the teeth of the wheels L and M.

The next function and the chief one is to measure out the yarn to the needles of the frame according to the stiffness or slackness required in the fabric. If the work is wanted stiff, then the wheel L is raised so as to have slighter contact with wheel M, this being effected by turning the

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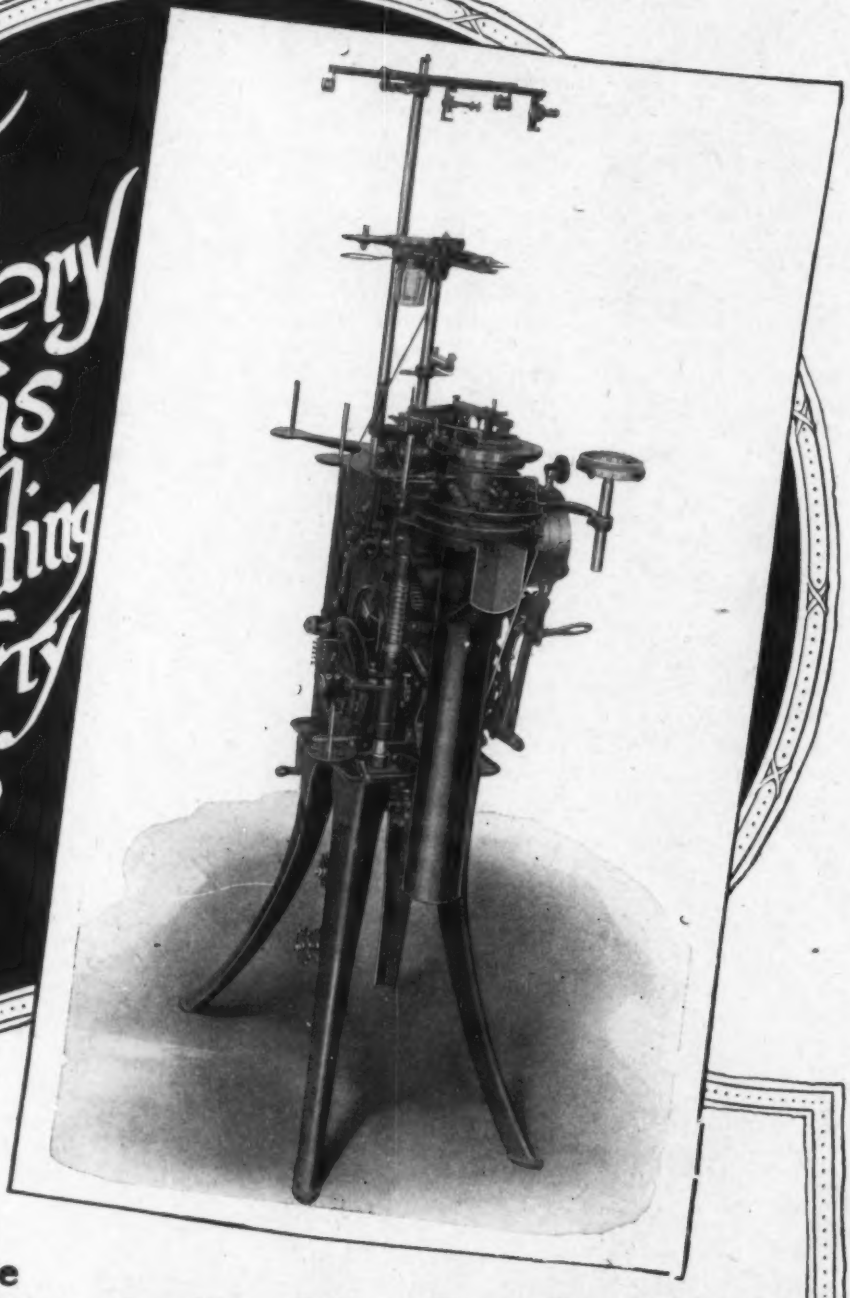

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star wheel SW. Should an opener fabric be required and a greater length of thread needed to feed into the fabric, then the teeth of wheel L are made to sink more deeply into contact with the teeth of wheel M, which means that a greater length of yarn is gripped seeing that the thread has to curve round the teeth of both wheels.

A further outstanding advantage of this regulator is that it is great help when working soft tender yarns, which cannot be operated on the ordinary form of knitting machine without serious breakage resulting. This machine is largely adapted for fleeced fabrics, where the backing yarns are thick and fluffy and have a minimum of twist imparted to them. If these soft yarns are fed into the sinkers of a frame direct without any saving intermediary, they run a great risk of being cut by the sharp edges of the sinkers and holes are easily made in the fabric. With the thread regulator the proper length of yarn required for the loop is served out to the needles so that there is little strain in loop formation. The continental manufacturer has led the way in the matter of fleecy-backed fabrics and his success is largely due to the assistance of the thread regulator in knitting the soft, slack-twisted, fleecy yarns. In the illustration the thread guide is indicated by the letters TG whilst the jacks are shown at J in the act of pushing the measured yarns over the needles.

Figure 1 also illustrates the motion which brings the machine to a standstill when the thread breaks. It will be noted that the yarn on its way to the needles just after leaving the thread regulator passes through the eye of a finger marked F, this finger being connected with a lever S which when the thread is in contact is always in a horizontal position. The finger is also connected with the vertical part S X H which works in the form of a lever with its fulcrum at X, the upper end of the lever taking the form of a rod H which acts on the projection marked R. To stop the frame it is only necessary to touch the rod R when the belt is at once transferred from the driving to the loose pulley. When the thread is in contact with F, F is held up and the frame continues to work. If however the thread breaks, the finger falls and causes lever S to fall down towards the left when it encounters the teet of a small wheel working on the same pin as DW and as a result the bottom part of the upright lever SXH is pushed towards the right and the upper part marked H is pushed to the left against the rod R. This causes the frame to cease knitting before the thread reaches the point of the thread carrier TG. When the thread is secured and run through the eye of the finger F, the frame is set in motion once more.

One of the earliest forms of take-up for the fabric after knitting was to have the material leave the frame in an vertical direction and cause it to pass through a metal opening suspended from the roof. To the fabric was attached weights, the number being increased according to the tension required. When these weights reached to the floor as they did at short intervals of working, the operator raised them once more to a higher position. The occurrance of a press-off was promptly heralded by a loud bang as the weights and fabric roll collapsed on the floor. We have traveled a long way on the road to progress since that time, but the question of the proper rolling up of the fabric is one which gives rise to much trouble even to-day either through faulty adjustment or some inherent defect in the motion itself. The writer has had experience with a machine where the proper adjusting to the take-up of the fabric roll has baffled many mechanics to solve and the only way to secure continuous working is for the operator to keep a look-out for the fabric's getting slack, when he has to administer a few extra turns to the wheel to draw it up tightly again.

Figure 2 gives a few details of a winding-up motion employed on the circular machine made by the Wildman Co. of Norristown, U. S. A. and which is experiencing an extremely active demand in Great Britain and other manufacturing countries. The fabric proceeds downwards towards the taking-down rollers which are usually of the corrugated metal type to grip the fabric firmly and prevent slipping. The rollers are driven by means of the

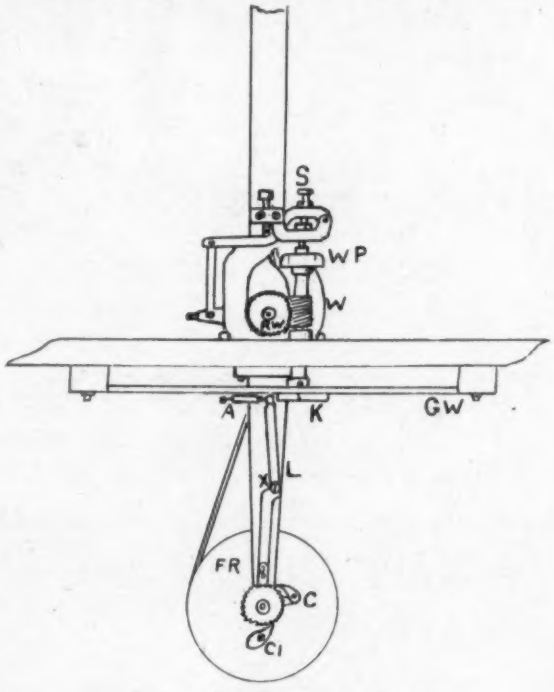

Fig. 2.

toothed wheel RW which is at the end of one of them and in turn receives its motion from the vertically placed worm marked W This in turn receives its movement from the gear ring GW below, which turns with the rotary motion of the frame. The gearing ring is toothed all along its inner rim and gives the worm a motion which is next communicated to the toothed rollers.

This ensures that the fabric is taken down from the needles of the machine, but the next step is to have the roll of web wound onto the fabric roller FR, which is made to turn by the lever L with fulcrum at X which works a ratchet the catch of which is shown at C, with the safety catch at C1. This lever takes its sweep to give forward motion to the catch C by being in contact with the eccentric K, and the extent of the sweep can be adjusted simply by turning the finger A inwards or outwards. The bigger sweep allowed to the lever L, the greater is the amount of fabric wound onto the roller in a given time and vice versa, a smaller sweep representing a smaller rate of fabric wind-up.

The adjustment of the toothed rollers to take-up the fabric from the needles takes place by means of the screw

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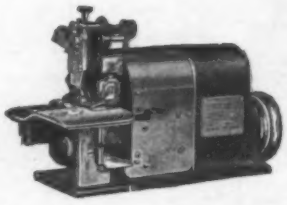

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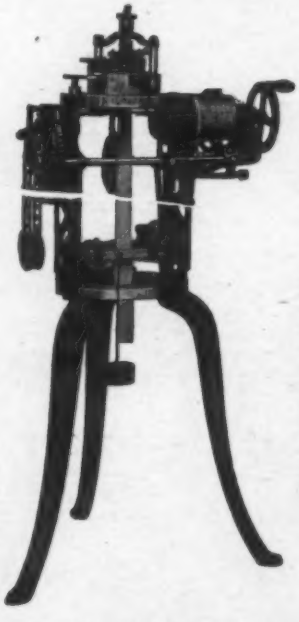

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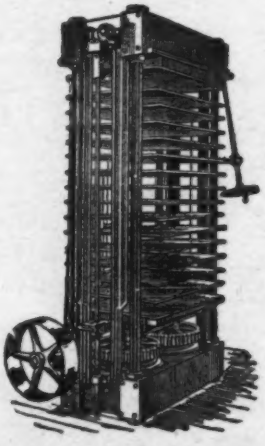

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marked S which works in connection with the washer plate WP, which always revolves at the same rate as the shaft, Two pins are fixed on this plate and composition washers have holes cut in them to correspond with these pins. The washers are arranged in the form of positives and negatives placed alternately on each other, the top washer is of the composition type and usually two of each type is sufficient. The rollers do not take down fabric continuously but these have an intermittent motion according to the fineness of the cloth being worked. A fine gauge requires a less speed of roll-up than a coarse gauge and vice versa and these washers are employed to regulate the amount of slipping which the worm has to do. If the washers are screwed down tightly by means of the screw S then the take-up of the fabric increases, whilst if the screw is loosened so that the washers are less firm in their grip on each other, then the take-up rollers slip more frequently and the rate of fabric wind-up is correspondingly reduced.

Among the Knitting Mills.

The Groblue Knitting Mill, Inc., 68 Springfield Avenue, Newark, N. J., has had plans prepared for the erection of a new one-story and basement building to be used for the manufacture of knit goods and kindred products. It is estimated to cost about $20,000.

F. A. Patrick & Co., Duluth, Minn., manufacturer of woolen and knit goods, has filed notice of an increase in capital from $3,000,000 to $4,000,000.

The Hub Knitting Mills, Inc., 1007 Buchman Avenue, Ridgewood, L. I., manufacturer of knit goods, has completed plans for the erection of a new one-story addition to its local plant. It will be of brick construction, 33 x 128 feet.

The Pohatcong Hosiery Mills, Inc., Washington, N. J., has had plans prepared for the construction of a new two-story and basement plant for the manufacture of hosiery. E. Warkle is president and treasurer.

The Roff Underwear Co., Cohoes, N. Y., manufacturer of knit goods, occupying the local Steadfast mill, is installing new equipment for increased production.

The Nalpak Sweater Mills, New York, N. Y., have been incorporated with a capital of $20,600 to manufacture sweaters and kindred specialties. The incorporators are G. F. Mattuck, M. Lefkort and J. H. Kutner, 135 Broadway.

The Cadet Hosiery Co., Oneida, N. Y., operating branch plants at Philadelphia and Chicago, has filed notice of a change in name to the Cadet Knitting Co. The company has also recently increased its capital from $5,000,000 to $30,000,000. W. M. Pepper is president.

The Danish Knitting Mills, Brooklyn, N. Y., has filed notice of an increase in capital to $10,000.

The Pilot Knitting Mills, 824-26 Cherry Street, Philadelphia, Pa., has awarded a contract to H. J. Gordy & Brothers, 221 South Alden Street, for alterations and improvements at its plant, to cost about $4,000. H. J. Auerbach is president.

The Mutual Cooperative Hosiery Co., 357 Badger Avenue, Newark, N. J., has had plans prepared for extensions and improvements at its factory, with work estimated to cost about $12,000.

The Kingston Knitting Co., Boston, Mass., has leased a building being erected by the James W. Brine Company, at Carlston and Beacon Streets, Cambridge. It will be three-story; the site totals about 19,000 square feet and the building will occupy the entirety.

The Nitram Manufacturing Co., East Orange, N. J., manufacturer of cotton and knit goods, has filed plans for the erection of an addition to its plant at 115 Long Street.

The Auto Knitter Hosiery Co., Buffalo, N. Y., has awarded a contract to Edward Grupp & Sons, 125 Glenwood Avenue, for the erection of a new two-story factory on Genesee Street, 50 x 150 feet, to cost about $50,000.

The Swiss Knit Goods Shop, Atlantic City, N. J., has been incorporated with a capital of $120,000 to manufacture knit goods. The incorporators are Harold A. Brand, L. M. Herders and H. J. Grays, Philadelphia, Pa.

The Paducah Hosiery Mills, Paducah, Ky., are having plans prepared for the erection of a new one-story and basement addition to its local mills, 82 x 110 feet, estimated to cost about $25,000.

The Pilgrim Knitting Mills, Boston, Mass., have been incorporated with a capital of $10,000 to manufacture knit goods. The incorporators are Jacob Pelton, Martin Witte and Louis A. Barron, 6 Wabeno Street, Roxbury, Mass.

The Muskegon Knitting Co., Muskegon, Mich., manufacturer of knit goods has acquired a building at Pentwater, Mich., and is preparing to establish its main plant here. The structure is 250 x 275 feet and about 100 operatives will be employed.

The Pacific Knitting Mills, Seattle, Wash., have filed notice of an increase in capital from $25,000 to $150,000.

The William S. Nash Hosiery Mills, Philadelphia, Pa., have acquired a three-story brick structure at Fifth and Emerald Streets for expansion. It will be remodeled to accommodate the new industry and immediate occupancy is expected.

The Favorite Knit Goods Co., Brooklyn, N. Y., has been incorporated with a capital of $50,000 to manufacture knit goods. The incorporators are A. Gilbert, Julius Katzen and Jess Ungar, Brooklyn.

The Ypsilanti Underwear Co., Ypsilanti, Mich., has disposed of its plant to the Oak Knitting Co., Syracuse, N. Y.

The Metric Hosiery Mills, Reading, Pa., have had plans prepared for alterations and extensions at its plant for expansion. H. L. Huyette has the contract.

The Horton Knitting Mills, Brooklyn, N. Y., have been incorporated with a capital of $10,000. The incorporators are R. M. Suskind, A. and L. M. Morton,

Construction work is under way on the new six-story addition at the plant of the Vesta Underwear Co., Providence, R. I. Joseph F. Cole, Providence, is the contractor.

The United Hosiery Mills, Inc., 137 Fifth Avenue, New York, N. Y., has acquired quarters at 145-147 Fifth Avenue at an aggregate rental of about $100,000.

Fire, Oct. 11, destroyed a portion of the plant of the Oxford Knitting Corporation, 56 Walton Street, Brooklyn, N. Y., with loss estimated to be about $30,000. It is understood that rebuilding will be commenced at an early date.

The National Shawmut Bank of Boston is the distributor for the Pilgrim Memorial coins which have been issued by the Director of the Mint to commemorate the Tercentenary of the Landing of the Pilgrims.

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The Knit Goods Market

Something more than price reductions and price cutting is required to stimulate buying in a declining market. This was shown in a number of instances during October, when, it is believed, stagnation was more pronounced than it will be in the early months of 1921.

Quickly following the announcements of the American Woolen Co. and the Pacific Mills of declines in prices of woolen cloths for spring, the Amoskeag mills came out with lower figures and disturbed the market, which received another jolt when Bliss, Fabyan & Co., announced a price of 32½ cents a yard for denims and 37½ cents for goods on order, the last previous mill price being 47½.

Hosiery and underwear buyers affected to believe similar reductions in these lines were imminent and studiously avoided the market, except to come in for getting their bearings and returning without making commitments other than for a few cases for at once delivery.

It is no idle guess that in heavy weight underwear repeat orders were fully offset by cancellations, which came in an avalanche to some operators. Before the middle of October hosiery had undergone downward revisions and suffered insignificantly from cancellations, the bulk of these having been received by the end of September.

Hosiery in first hands has been available at cost of manufacture, and even at that was not attractive to jobbers. On much that left the mill manufacturers have taken losses, putting high priced yarn and labor at high cost into stockings that it seemed impossible to move. Large buyers, such as the five and ten cent stores and catalog houses, have taken advantage of many of the sacrifices made by manufacturers clearing their warehouses of yarns and finished product in the process of liquidation and completing the preliminaries for entering the new year on a perhaps lower level of prices than have prevailed since heavy purchases for the armies of the allies suddenly precipitated a demand such as never had been experienced by the oldest operator.

While market stagnation is at a lower stage than in any previous industrial depression in the memory of manufacturer and jobber, it is suspected there has been more buying of hosiery than is generally admitted, for it seems inconceivable that there would not be a few jobbers eager to benefit by less-than-cost-of-production prices, and it is known that few mills which have continued in operation throughout the slump have stocks of any moment. For example, a large interior Pennsylvania mill which is giving employment to one-third of its help has, according to a recent report from the management, only one case of finished hosiery and less than 5000 dozens in process and in the gray. This mill is about at the end of its orders, but is having calls for a case now and then for immediate delivery. This latter business, unless it improves, will not be sufficient to continue the mill in operation, and an early shutdown is predicted.

With such large mills as those of the Lawrence Manufacturing Co., Lowell, Mass., and the Ipswich, whose branch at Gloucester, Mass., recently went into the idle class, closed down, it must be apparent that buying was in spots only and in small quantity, notwithstanding some few jobbers are believed to have acquired some bargain lots of hosiery. It must be obvious also that, with more than 70 per cent of the knitting machinery idle, much of it since early July, bins in mill warehouses are empty.

That the hosiery industry is dangerously near a state of complete stoppage admits of no argument, and that both jobber and retailer are running short of stock is shown in almost daily incidents in the trade. Possibly the smallest order ever placed regularly by a retailer was received by a jobber several days ago. It called for a half dozen pairs of seconds of ladies' mock fashioned silks. In the same day the same jobber booked a half dozen orders for from two to five dozens. Retailers in outlying sections of several cities are buying so conservatively that small jobbers have found peddling profitable, selling in quarter dozen to one dozen lots from automobiles and pushcarts.

Few of the larger jobbers are better supplied, relatively, than the smaller retailers buying from peddlers. A large eastern concern which is known to use 50,000 to 60,000 dozens of misses fine gauge ribs from one factory alone has less than 500 dozens, while ordinarily 10,000 dozens constitute a normal stock. The attitude of jobbers toward the market is well illustrated in the admission of the head of a New York establishment that it is in immediate need of a quarter of a million dollar's worth of knit goods and other supplies used by a wholesale dry goods house, and his assertion that not a dollar's worth is to be bought until it has been established prices are at the bottom or the house is forced into the market to meet its requirements.

The situation was thoroughly canvassed at a recent conference of ten important manufacturers, who made themselves responsible for the published statement that, on the basis of present cost of production, prices are so low that they will have to advance if machinery is to be kept moving. It was the sentiment also that unless buying in the knit goods primary market soon improves, the only salvation for manufacturers will be a more complete stoppage.

For four or five months the market has been wholly in the buyer's favor, and in that period it has been an unsatisfactory one for both buyer and seller. It is only when the market favors the seller that conditions encourage capital investment in new enterprises. The next market will be in the seller's favor if he abandons the notion that the buyer can get along without him. The shutting down of mills is the first step toward creating demand. That once established, there will be an approach to complete recovery.

But even now, with sad experiences still before them, many manufacturers are prone to give all the advantage to the buyer. This may be justified if the seller be in distress for funds. Otherwise it will prove a species of yielding, the baneful effect of which will later plague the ultra-flexible.

The number of hosiery manufacturers who are guaranteeing their prices against their own declines cannot, of course, be approximated, but it is known that the practice, vicious as it is, is being extensively indulged in. There are jobbers who assert they will not buy unless they be guaranteed against loss from further declines. Most of these same timid merchandising men would bet on a

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horse race or open a pot on a pair of jacks. Yet they would not hazard the purchase of a case of hosiery unless the seller afforded them complete protection. It is a cowardly way of doing business, and years hence will be bitterly condemned, and then the sellers, who now indulge buyers, will cry out for organized effort for having the policy discontinued.

It is not unlikely that had the underwear manufacturers, when several weeks ago they announced prices for spring, been willing to protect buyers against loss from declines, practically every jobber would have bought for his entire spring requirements. It is encouraging that the manufacturers have stoutly refused to extend the guarantee. They would have had no protection from the spinner, neither would there have been assurance that cost of production will not be increased, a contingency against which there is no guarantee.

Were it possible to forecast by six months the ultimate value of cotton and mill wage scales it doubtless would be absolutely safe to guarantee against declines such prices as three New York selling houses named recently, running as follows:

1. Full artificial silk half hose, $3.75; fibre plated half hose, $5; 10-thread silk half hose, $6; 220 needle mercerized socks, $3; 220 needle socks, combed, high spliced heel and double sole, $1.80; women's mercerized, seamed back, $3.62½ for 220 needle and $3.75 for 240; misses, size 7, combed, 260 needle $2.25; 300 needle, $2.40, and mercerized 260 needle, $3.62½; 16 inch fiber boot $6, and 17 inch $6.75.

2. Mercerized half hose, 220 needle, $3; women's mercerized, 220 needle, seamed back. $3.50 220 needle 10-strand silk half hose, $5.50.

3. Fibre boot, 16 inch, 220 needle, $5.75, and 19 inch 260 needle $8.50.

The following are reports of prices asked and obtained from scattered operators:

Misses combed 344 needle, bought by a distributor in large quantity, at $2.40.

Ten-strand silk 18-inch boot offered by a mill at $6.75 and not taken.

Sewed-toe half hose, 144 needle, offered to a commission house at $1.25; dealer countered by offering $1.15 and offer was declined.

Twenty-inch boot 10-strand silk, mock fashion and mock seam, mercerized top, heel, toe and sole, $7.25. A similar stocking, but of silk and fibre in combination, quoted at $7.25.

These figures, it should be borne in mind, possess little market significance, for they are more likely to be shaded by competitors than advanced. They do not establish a market value, and are of no moment except as they be accepted as reflecting the demoralized state of the market.

Necessarily the new price of artificial silk, offered now at $2.50 a pound, a drop from $3.95, and offerings of mercerized yarns at less than market quotations of yarn in the gray, has had an adverse effect. Combed peeler 60 two ply mercerized being freely quoted at $1.25 and obtainable at one dollar a pound doubtless was a factor in the striking revision of prices on mercerized hosiery, which is further disturbed by the question as to the extent to which mercerized yarn may be affected by the reduction in artificial silk, with Japan silk wobbly, to say the least, and showing not the slightest indication of early steadiness.

The markdown of artificial silk yarn may tend to increase exports of artificial silk hosiery. In fact, it is stated by a hosiery factor but recently returned from a two-months' visit to England, France and Italy, that in Great Britain merchants were ready to buy in the United States markets, when the United Kingdom was confronted with threats of the British coal miners' strike, which began on October 16. Economic conditions abroad are responsible for curtailment of our exports, a fact which is not being overlooked by careful operators in the planning of their manufacturing campaign.

This year's exports of cotton and artificial silk hosiery, to August 31, amounted to 9,294,955 dozens, exceeding by 3,088,671 dozens the total hosiery exports for the whole of 1918. Last year's exports were only 1,776,571 dozens more than for the first eight months of this year, and there was every expectation of a substantial gain for 1920 over 1919. Statistics for August would seem to warrant a revision of all previous estimates, for in that month the exports of cotton hosiery amounted to only 617,893 dozens, and of these 102,763 dozens were shipped to Cuba, where the moratorium which was declared on October 11, to be in effect fifty days, may work toward a shutting down on imports. And now that England is in the throes of a momentous strike two important outlets of United States hosiery are for the time closed.

Countries other than Cuba which in August took more than 5000 dozens of cotton hosiery were: Denmark, 10,662; France, 10,068; Greece, 14,380; Italy, 21,965; Netherlands, 10,765; England, 97,347; Canada, 21,792; Costa Rica, 6,532; Mexico, 8,113; Trinidad and Tobago, 7,551; Argentina, 29,780; Brazil, 5,832; Chile, 23,440; Colombia, 7,528; Ecuador, 6,021; Peru, 18,162; Uruguay, 14,075; Venezuela, 10,634; British India, 20,461; Australia, 69,079; New Zealand, 7,018; Philippine Islands, 12,145; British South Africa, 20,909; Egypt, 9,734.

Artificial silk hose exports for August showed a considerable falling off, amounting to 53,699 dozens. Belgium took 4,080 dozens; Italy, 3,570; England, 22,609; Cuba, 5,205; Argentina, 7,298; Australia, 4,415.

Conditions abroad and absence of price confidence at home do not augur for a brisk winter at the factory, where, it would appear, still further curtailment must be practiced if the headlong movement toward lower values is to be checked. Fundamental soundness has averted panic. There may be further declines, but so far as utter demoralization is concerned, there is a growing feeling that the crisis has been passed and that once confidence in prices has been re-established there will be sharp market recovery, with no likelihood, however, that it will be necessary to operate all of the available hosiery machinery.

There is less fear of overdoing underwear production than an excess output of hosiery, and by mid-winter heavy weight underwear may not be so abundant that jobbers will feel they were warranted in cancellations of orders, return of merchandise and liquidating holdings at prices under those at which contracts were placed early in the buying season.

Winter underwear production was materially lessened by the long strike in the Cohoes and Mohawk Valley districts and by the October shutting down of plants because of cancellations and returns. Even now there are inquiries from retailers for prices, for immediate delivery garments.

Many of the inquiries meet with no response, for it has been made apparent to mills that quotations would be more than met by jobbers who are liquidating.

One explanation for the recent unloading by jobbers was the naming of lower prices by several manufacturers of ladies' heavy weight garments. A well known mill which has completed orders is offering a line of women's union suits at $14.50, which is a drop of $6.50 from the high price of the selling season. The same mill offers single garments at $8.50, a decline of four dollars from the top price of the season. The mill's customers necessarily were the first to be appraised of the revisions, and these would be interested in liquidating the higher priced garments so long as they can do so anywhere above the figures named recently for spot business. The ten days of summer weather during October produced a setback in the winter underwear market, recovery from which probably will come with more seasonal temperatures.

Ordinarily, buying of underwear for spring would be a matter of the past and much of the merchandise would have been delivered. This season witnesses conditions which have no precedent. It probably is well within the bounds of conservatism to say that not 10 per cent of the underwear for next spring has been bought, and there is nothing to indicate that any will be bought this side of the middle of November. There will remain but five months at the most to manufacture and distribute the underwear which will go over the counter next spring and summer. It is a foregone conclusion that some dealers will find themselves short of supplies, unless there be large carry-over stocks, which jobbers admit is doubtful.

Mills named prices about the first of October and were ready with samples. No buyers showed up, and a second attempt at opening was made, with no better result. Since then a few scattered jobbers have bought just a little. A New York State mill is reported sold up to March on ladies' light weight ribbed garments, prices not guaranteed. The lines are distributed by comparatively few jobbers, under their own marks, and to have remained out of the market longer would have made it impossible to meet their requirements as to quantity and branding. This may explain the isolated case of a mill selling four months production, and at prices from three to five per cent higher than at the opening in 1919.

Another mill has named prices on women's ribbed underwear for summer an average of 16 per cent higher than at the opening in 1919, but has booked little or no business. Thus far there has been nothing to encourage the hope that underwear on the counter next summer will cost the consumer any less than that which was purchased during the recent season.

Mill prices, although probably as low as they can be under the present cost of production, are keeping jobbers out of the market, say buyers for some of the leading houses. It is explained that the retailer is not disposed to do any advance buying and that the jobber will refuse to carry merchandise for the retail merchant. Even though they were willing to do so, a leading jobber said, his house would make no contracts for spring underwear, for the reason, he explained. "We have no confidence in prices."

It has been held by underwear manufacturing and merchandising experts that prices to jobbers now on next spring's goods would have to be not less than three times prewar. When Frank H. Burgher, Otis Manufacturing Co., predicted that would represent the average increase, jobbers contended twice prewar was all they would pay. Thus far they appear to be making a winning fight, which, however, may be lost to them if they overstay the market and come in when bins are bare, as they soon will be, for many mills already are closed down and more are closing. There will have to be at least an approach to stabilization in the yarn market before manufacturers will make firm prices for delivery beyond January.

One thing that seems quite certain is, there will be no cancellation of spring underwear orders. The outlook is for such a rush of late orders as will swamp many mills. But in view of the condition of the wool market there will be no heavy advance operation in cotton underwear. There will be a large volume of business to be taken care of in a few months, a business which, if spread over a normal season, would not be phenomenal for volume. Normal volume will come when prices have been readjusted.

Much complaint is heard of the average retailer's rebellion against liquidating and preparing to go along on a new market. Some very low prices of hosiery are heard in large department stores, but the lowest usually are well above replacement value. During the rise, merchants used replacement cost as a basis for pricing goods. They have not followed this policy during the decline. The retailers apparently have been banking on a brisk holiday trade for enabling them to sell at prices based on the past high cost. They seem not aware that their attitude is responsible for the closing of factories and making idle persons of wage earners, thus reducing the purchasing power. They simply are deferring the inevitable participation in the process of deflation and in so doing are incurring losses that more than offset what should be their gain. One retailer admits he lost three sales in one day because he did not have the articles wanted by customers.

It is thought by some interests that market conditions will improve when manufacturers are able to figure cost on a revised wage scale, which, many believe, will be about 20 per cent under the scales prevailing before the slump in all textiles. It is not expected there will be arbitrary reductions, but that when mills resume employers will announce the pay schedules on which they will be willing to reinstate operatives. By that time, it is assumed, there will have been so prolonged and widespread idleness that mill help will be willing to play its part in deflation, not forgetful that it was a party to inflation.

Already knit goods mill employees have expressed a readiness to accept a 20 per cent reduction, rather than be left without employment. Even such a reduction was not sufficient to enable one of the large mills to resume, with jobbers out of the market. A Philadelphia mill is closed down because the fixers alone refused to return to work at a 20 per cent reduction, all the other operatives reporting for work on the day when it was intended to start the machinery. Either these fixers will have to yield, or others will take their places, or the mill will remain closed indefinitely the management says, and it is thought to be doubtful whether, if commodity prices continue to decline, an ultimate reduction of more than 20 per cent will not have to be made.

Up to the period of warm weather in October, business in sweaters was making a fairly good showing. Business for the remainder of the year promised well, but warm days brought more cancellations, with the result that jobbers

and commission houses have considerably more stock than is pleasant to contemplate. The small quantity purchases of the early part of Fall dwindled off, until buyers of dozens were taking the smallest possible number of garments a wholesaler would sell. Manufacturers, however, probably will close the season well cleaned up, for there has been severe curtailment and buying has been so light that it is obvious there will be keen demand toward the end of the year.

The Yarn Market.

After being shaken to its very roots by the process of readjustment and deflation, the cotton yarn industry of New England has weakened until the situation is now most chaotic. The tremendous drop in raw cotton has been a decidedly important factor in augmenting the unrest and members of the yarn trade are practically at a loss to cope with the situation. No longer is it safe to predict improvement as the more optimistic have been inclined to do, for experience in the past few weeks has shown that it is a question of guess work. Confidence is possibly less manifest, as the trade depression that is now so general continues to play no favorites, and leaves business in yarns practically stagnant.

Curtailment has been the rule for some weeks in the textile centers of New England and at this writing mills are closing down for indefinite periods rather than face the most uncertain future with practically no business in sight. In New Bedford alone production is estimated at 20 per cent of normal and thousands of textile employees are idle in full or in part. The Sharp Manufacturing Company set the pace in that city by closing down their mills indefinitely Oct. 15. The S. Slater & Sons, Inc., mills at Webster, Mass., making cotton and woolen goods have also shut down completely after operating three days a week for some time. Short hours of operation are now general in mills throughout the entire Blackstone Valley of Rhode Island.

Prices have slid steadily downward until levels have been touched that are in some instances lower than prewar rates. This tends to make stable market quotations almost unknown, as "distressed" lots of yarn are disposed of to the best possible advantage. In many instances this means a price so low as to be hardly credible were it not a common practice. The figures in the following table represent actual sales at this writing, where yarn has been moved without compulsion but in small lots. Spinners have accepted much lower figures however, one instance being a quotation of 47 cents for 14s two ply, warp twist weaving yarn, and 48 cents for 20s two ply, whereas those counts have been moved at the same time for 50 and 52 cents respectively. It is generally admitted among the trade that prices are no longer an attraction, some of the low quotations heard, tending to further unsettle the ideas of buyers. Customers as a general thing have passed the point where they are impressed by low quotations and frequently admit that the rates are too low for healthy business. Meanwhile food for serious thought is furnished by the announced cut in price of Fruit of the Loom goods; the 33⅓ per cent reduction by the Amoskeag Company; the drop in prices of many makes of automobiles and the general downward trend of other commodities.

While the average buyers now hold off until they have actual goods orders to cover before buying yarn, an occasional sale is made of small size for quick delivery that stands out from the business depression like a beacon through the haze of chaos pervading most of the industrial world. It is usually to complete some order for finished goods or perhaps to make up new samples. The activity when combined, however, shows but very little yarn being moved.

Yarns for electrical goods which are probably in better demand than any other variety, have begun to feel the "trend of the times" and are easing off somewhat in price but more especially in pressure for delivery. Carpet yarns have dropped to 30 and 35 cents and a fair demand is felt for them. Tire yarns on the contrary, are in much the same position as hosiery and underwear yarns, although possibly they are even more quiet. Manufacturers are reported to be overstocked with tires and those handling Egyptian cotton report the tire market to be absolutely dead. Scores of spindles that were confiscated from the hosiery and warp twist trade for turning out tire yarns during the apex of an abnormal war demand, are now being placed at the disposal of the trades from which they were taken. Thread yarns are neglected, with practically no demand and most limited inquiry. In fact the situation is so precarious in this branch of the trade that the American Thread Company has ordered curtailed operation in all its plants which are located at Fall River and Holyoke, Mass., Willimantic and Glasgow, Conn., Westerly, R. I., and Willimantic, Me.

Recent quotations in the New England market on representative numbers, compared with those of a year ago, follow:

Grades	Current Prices.	Year Ago.
Southern Single Carded Cones.		
10s	43	55
12s	43	56
14s	44	57
16s	45	59
18s	50	60
20s	51	61
22s	53	60@64
24s	54	61@65
30s	63	72
40s	90	89@94
Weaving Yarns—Warp Twist.		
10-2	49	58@60
12-2	49	59
14-2	50	59
16-2	51	60
20-2	52	65@67
24-2	53	75@77
30-2	55	85
36-2	83	92
40-2	90@95	98
Northern Carded.		
10-1	50	60
16-1	52	61
20-1	54	62
26-1	62	64
30-1	67	67@70
40-1	95	90@95
Northern Combed.		
10-1	71	78
16-1	72	79
18-1	73	81
20-1	75	84@88
26-1	78	89
30-1	85	1.00@1.03
36-1	1.04	1.12
40-1	1.05	1.15

With demand considerably below the increasing available supply, the October cotton yarn market in Philadelphia opened with none of the "improved" business reported from certain eastern markets, although prices were under those in effect elsewhere. During the first week inquiry slumped below preceding weeks and buying was generally of the hand-to-mouth variety which had been characterizing business for months back.

In view of the unsettling influence of outside developments which included the numerous announcements of price cutting and resulted in pronounced depression of

market values of other commodities, yarn prices for this first week were remarkably steady. Of course, reductions ruled in a majority of the business that was transacted, but with very few exceptions, these reductions did not exceed a few cents a pound on any individual count. The prevailing yarn position seemed strengthened by previous deflation.

Hand-to-mouth trading continued through the month to the detriment of yarn prices, although many mills declined to accept orders below cost of manufacturing. It is asserted that yarn may be expected to fluctuate with raw cotton figures during the last quarter of the year, to become lower or higher as the cost of the raw material falls or rises. During this period, also, it is said that possibly the liquidation of labor may contribute toward low yarn prices. But it is believed by a good many that there is very little likelihood that demand for yarns will be strong enough to cause yarn rates to stiffen before the end of the year.

As the month went by, conditions in the market were, of a depressing nature. Prices continued to fall and one day's rates were quoted at from three to 15 cents a pound under those effective a week before.

The most important developments of the period were those relating to underlying market conditions. These, in themselves, did not undergo a change, but the various branches of the textile industry obtained a definite idea of where they stood and in many ways this was not reassuring. What happened in the carpet and rug trade during the month presents an illustration of one phase of the situation. Representatives of Philadelphia carpet and rug interests, returning from New York, were reported to have offered jobbers a 10 per cent reduction in prices, on which the jobbers refused to operate. Curtailment in carpet and rug mills is seemingly becoming general. However, occasional inquiries for carpet yarns were uncovered for spots.

The substance of this, as applied to the yarn market outlook, according to operators on the Philadelphia market, is that there is little reason to expect any improvement in the situation for several months to come, regardless of price trends. The carpet and rug trade has suffered a serious repulse, according to the Philadelphia factors, and the yarn market, say they, will be called upon to stand a share of the consequent reaction.

This is merely one way of illustrating the manner in which the various groups of yarn users, one after the other, are eliminating themselves as really potential outlets for yarns, for the next few months at least. The belting trade appears to be in a somewhat similar position with that of the carpet and rug manufacturers.

As this is written, the Philadelphia market again goes through the routine of marking down prices, in the basis of scattering sales, following additional offerings from spinners and the forced unloading from some unnamed quarters of several lots of "distressed" yarns. Incidentally, it is recalled, present price levels are corresponding with those in effect in June 1917.

Recent Philadelphia quotations follow:

Southern Single Skeins.			
4s to 8s	.35	10s	.35
12s	.36	14s	.37
16s	.38	20s	.40
24s	.44	26s	.45
30s	.47		
Southern Single Warps.			
8s	.36	10s	.37
12s	.38	14s	.38
16s	.39	20s	.40
26s	.46	30s	.48
40s	.65		

Carpet and Upholstery Yarns in Skeins.	
8-3-4 slack	.32
9-1-4 slack	.32
8-3-4 tinged tubes	.30
8-3-4 hard white warp twist	.32
8-3-4 hard twist waste	.28

Southern Two-Ply Skeins.			
8s	.36	12s	.38
14s	.38	16s	.39
20s	.40	24s	.44
26s	.46	30s	.47
40s	.65		
Southern Two-Ply Warps.			
8s	.36	10s	.37
12s	.38	14s	.38
16s	.39	20s	.40
24s	.44	26s	.46
30s	.48	40s	.65 @70
Southern Two-Ply Combed Peeler Skeins and Warps.			
20s	.75	24s	.80
30s	.85	40s	.90
50s	.95	60s	$1.05
70s	$1.35	80s	$1.60
Southern Frame Spun Carded Yarn on Cones.			
8s	.35	10s	.35
12s	.36	14s	.37
16s	.38	18s	.39
20s	.40	22s	.41
24s	.43	26s	.44
30s	.46	40s	.65
30s tying-in			.45
30s double carded			.55
Northern Mule Spun Carded Yarn on Cones.			
10s	.41	12s	.42
14s	.43	16s	.44
18s	.45	20s	.48
24s	.52	26s	.54
30s	.56	40s	.80
Northern Mule Spun Combed Peeler Yarn on Cones.			
10s	.68	12s	.69
14s	.70	16s	.71
18s	.73	20s	.75
22s	.76	26s	.79
28s	.80	30s	.85
36s	.95	38s	.97
40s	$1.00		

The Electro Bleaching Gas Co., manufacturers of "Liquid Chlorine" 18 East 41st St., New York City, have issued a new 40-page booklet on textile bleaching which should prove a valuable aid to the textile bleacher. In this booklet are given, for the first time outside the pages of COTTON, the various formulas used for the making up of a bleaching solution from "Liquid Chlorine." The booklet shows the equipment to be used in making a bleach on a small scale and on the large scale as well as describing special control equipment for the manufacture of bleaching solutions. It also contains other valuable and interesting information. The booklet can be secured upon request.

STATEMENT

of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of COTTON, published monthly at Atlanta and Dalton, Ga., for October 1, 1920.

State of Georgia, County of Fulton, s. s.

Before me, a Notary Public, in and for the State and County aforesaid personally appeared O. A. Sharpless, who, having been duly sworn according to law, deposes and says that he is the Treasurer of COTTON, and that the following is to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, W. R. C. Smith Publishing Co., Atlanta, Ga.; Editor, L. L. Arnold, Atlanta, Ga.; Business Manager, W. J. Rooke, Atlanta, Ga.

2. That the owners are: W. R. C. Smith, Atlanta, Ga.; E. P. Smith, Atlanta, Ga.; W. S. Cushion, Cleveland, O.; O. A. Sharpless, Atlanta, Ga.; J. C. Martin, Atlanta, Ga.; H. H. Kelley, Atlanta, Ga.; W. J. Rooke, Atlanta, Ga.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or any other security holders are: None.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or books of the company as trustee or security holder appears upon the in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. O. A. SHARPLESS, Gen. Mgr.

Sworn to and subscribed before me this 6th day of October, 1920.

(Seal) JOHN C. MARTIN, Notary Public.

My Commission expires June 20, 1924.

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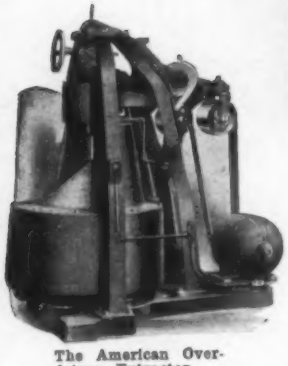

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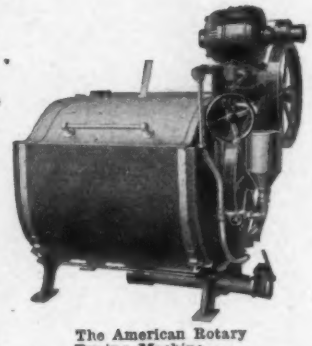

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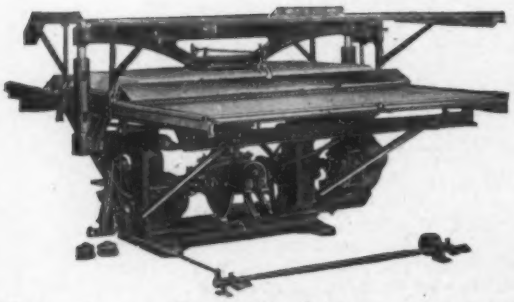

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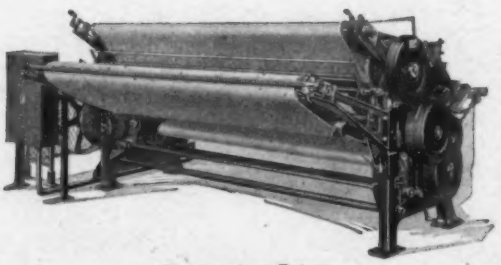

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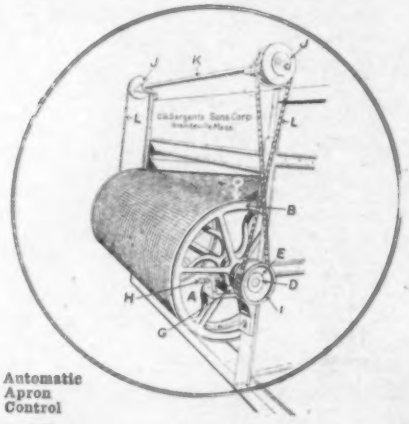

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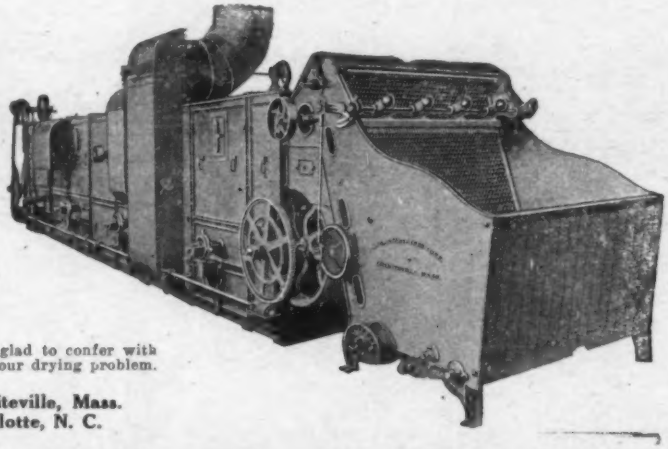

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Machines are furnished with either belt or motor drive.

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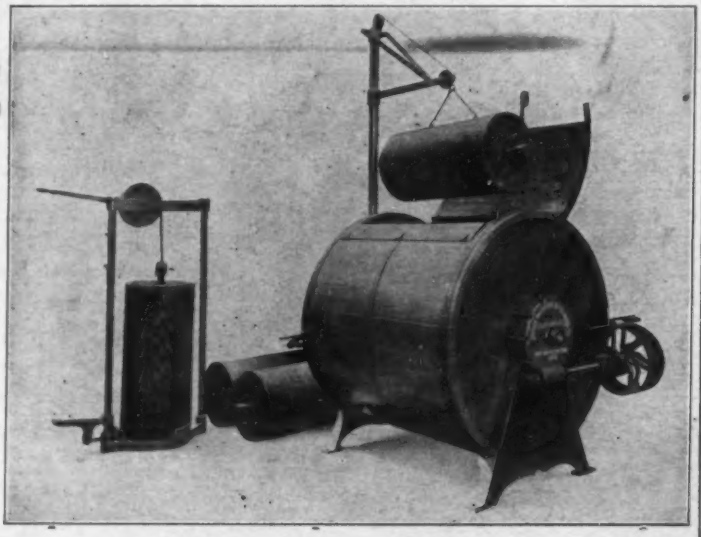

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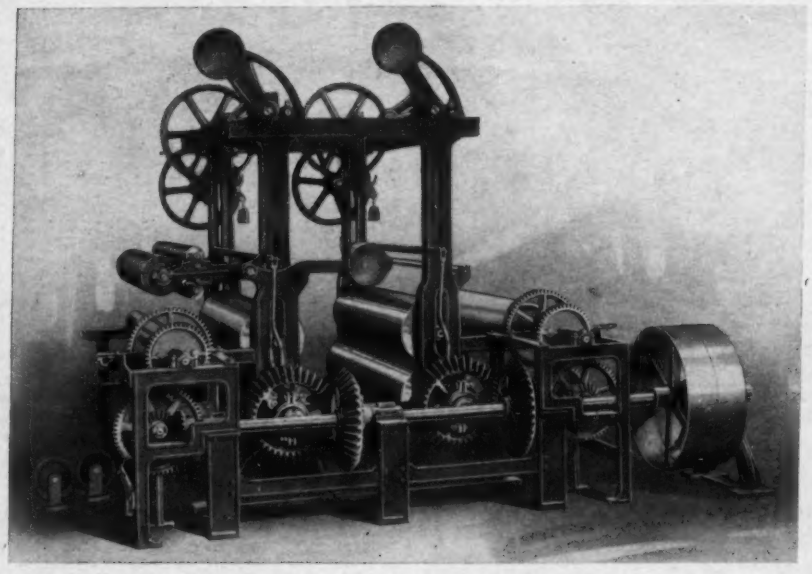

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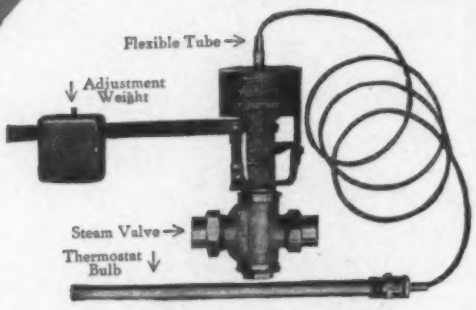

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The thermostat bulb is immersed in the sizing and connected with the steam valve by the flexible tube. Any change in temperature in the size immediately affects the thermostat, which operates the steam valve accordingly. This provides positive insurance against the size "skinning over" or becoming too thick.

It Helps Solve the Labor Problem

Automatic temperature control releases men and women for other productive work.

Whatever the size maker's formula there is one certain temperature at which the size works best and gives maximum results.

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It will **pay** you, in actual **money**, to see that the size box **never** gets too hot or too cool.

Depending on the slasher tender is **expensive**, and doesn't get the results. Only automatic thermostatic control can do that.

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A small compact and very powerful machine adapted to all laboratory work, and suitable for experimental purposes of every character.

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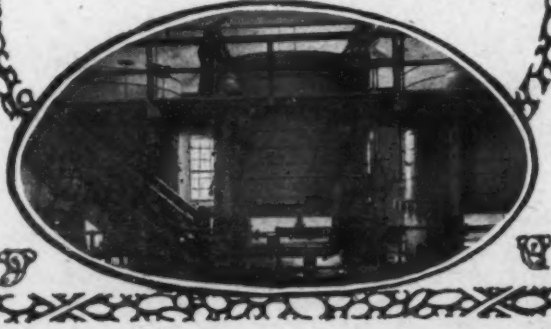

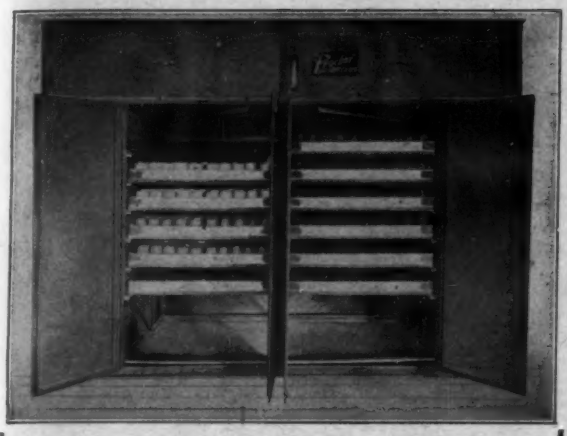

Proctor Dryer (cabinet type) for drying yarns in cones or tubes after being dyed in machines of Franklin Process Co.

For Yarns Dyed in Cones

The Proctor Yarn Dryer is advantageously adapted for drying yarns in cones or tubes after having been dyed in machines of the Franklin Process Company type.

The cones are dried not only uniformly, but also with a material saving of time, so that the utmost production is assured. The quality of the dried material is of the highest grade obtainable. Delicacy of color, uniformity, cleanliness, better knitting and weaving qualities—all these are obtained with the Proctor Yarn Dryer.

If you are interested in making better yarns, if you are anxious to realize in the drying operation economies such as low steam-consumption, small floor space, minimum operating cost and greater production—investigate the Proctor Yarn Dryer, the dryer which guarantees a profit to the user.

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Formerly Phila. Textile Mach. Co.
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"Proctor" DRYERS
116

Slasher-Tenders Have No Worries Holding the Exact "Size" Heat

SLASHER-TENDERS in the plant of the Naumkeag Steam Cotton Company have forgotten the old troubles caused by fluctuating temperatures in the size box.

They have no worries now producing a scientifically dressed warp—in effecting a 15 to 20% increase in the tensile strength of yarn—in decreasing breakage in the looms.

Because they use the—

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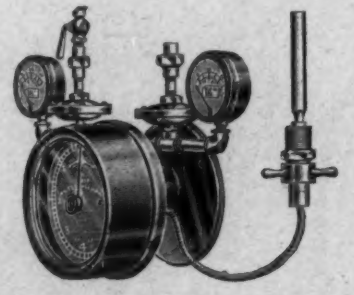

It's the automatic controller that everlastingly maintains the required temperature. To get the exact temperature, simply "set it and forget it."

Our Textile Experts are at your service—no obligation on your part.

Write for C. J. TAGLIABUE MFG. CO.
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THE Fourth Southern Textile Exposition held in Greenville, S. C., demonstrated the progress made by the new American dyestuff industry.

¶ The exhibit of the National Aniline & Chemical Company, Inc., illustrated the wide field which is supplied by its products.

¶ From the dyestuffs to the finished products in the various branches of the textile industry, the achievements of this company—the largest maker of synthetic dyes in America—were effectively shown.

¶ To those who were unable to visit the Exposition in person, an artistic booklet, giving a full account of the activities and descriptions of the Company's plants, will be sent on application.

Ask for booklet No. 64.

National Aniline and Chemical Co. Inc.

21 Burling Slip **New York**

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"No Scum on the Dye and Boil-off Liquors And Goods Have Better Luster and Softness."

That's what Mr. W. A. Thorne, Superintendent of the Dyeing Department of the Chester Knitting Mills, writes from St. Louis headquarters.

He says the water, before treating, was as high as 12 grains in hardness and that the

BORROMITE
Water Softening System

now gives him zero hardness.

Also that they use less soap and other chemicals and that, since installing the BORROMITE System they have gotten rid of their former trouble with streaks in dyed fabrics and now have practically no "seconds" due to bad dye.

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ARE YOUR COLORS FAST?

To know that your products are fast as to light and to what extent they fade, are facts worth knowing.

The COLOR FADE-OMETER is an instrument for STANDARDIZING YOUR KNOWLEDGE OF YOUR COLORS.

The COLOR FADE-OMETER means "Standardized Sunlight"—constant in quality—constant in quantity—always available—always reproducible.

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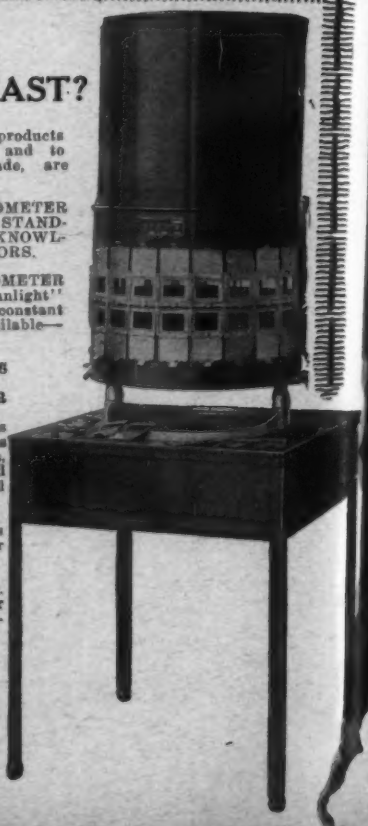
Fading and color tests of dyed textiles, such as woolens, silks, prints, carpets, velvets, and plushes, upholstering and COTTON.

Fading and color tests of wall paper and other papers, and leathers.

Write for Bulletin No. 20 "The Fade-Ometer Method of Color Testing."



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360 West Superior St.
CHICAGO ILL.

Soft Water
Is the Only Thing for Us

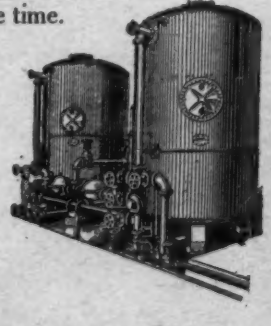
Before we had the Permutit Water Softener put in we were no better off than any other Dye House. Colors were always uncertain with a lot of redying to do as a regular thing. Sometimes a whole batch would come out streaked and spotted, and when we tried to match colors in different runs, we never knew where we were.

It's a lot different now though.

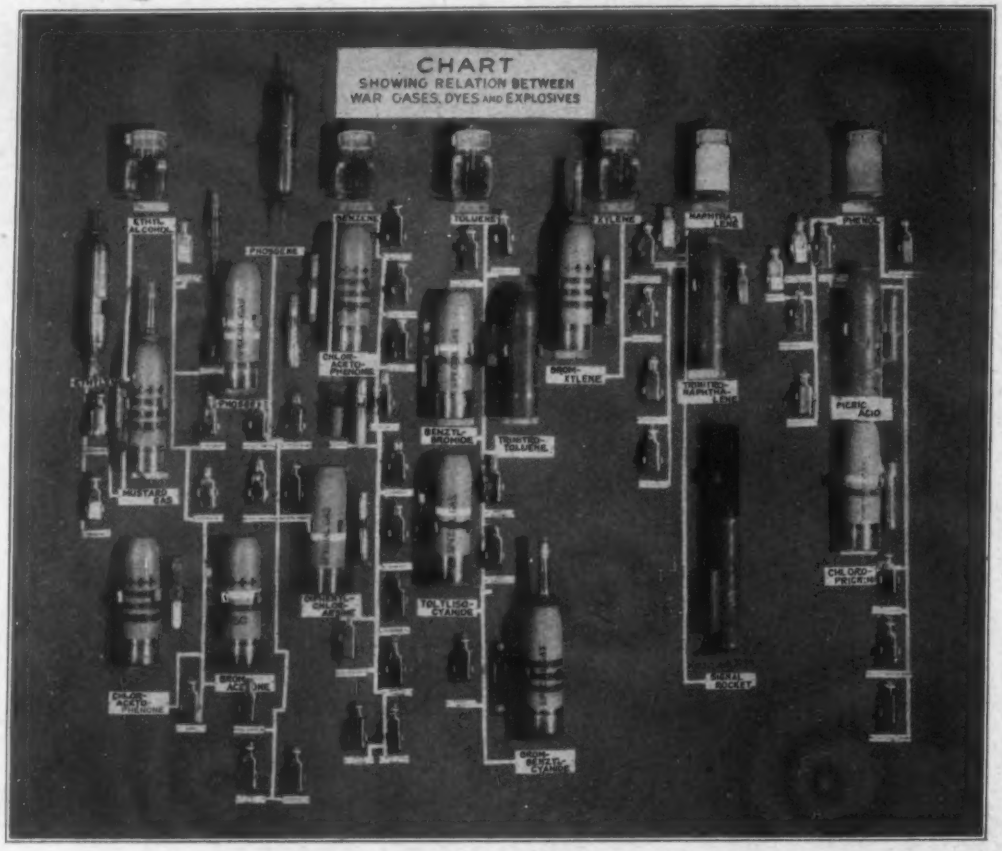
The Zero water (that means all the ha-dness has been taken out) is so uniform that we can work out formulas for colors and match them up nine times out of ten, and it's a rare thing to find spots or streaks.

We save a lot on supplies too. It figures out about 10 per cent saving on colors and 15 per cent for blacks in the dye house and in the washroom they save 50 per cent of their soap bill right along. The Chief Engineer figured out that he saves about 25 per cent of his coal too, due to having clean boiler tubes all the time.

There are hundreds of Textile Mills saving money with Permutit Water Softeners. Let us analyze your water supply and give you an estimate. No obligations. Write today.



The Permutit Company
440 Fourth Ave. New York
Offices in all principal cities



A chart showing samples of actual material entering into the manufacture of poison gases, dyes and pharmaceuticals.

—at the Chemical Warfare Service Exhibit National Exposition of Chemical Industries

CHEMICAL INDUSTRY—

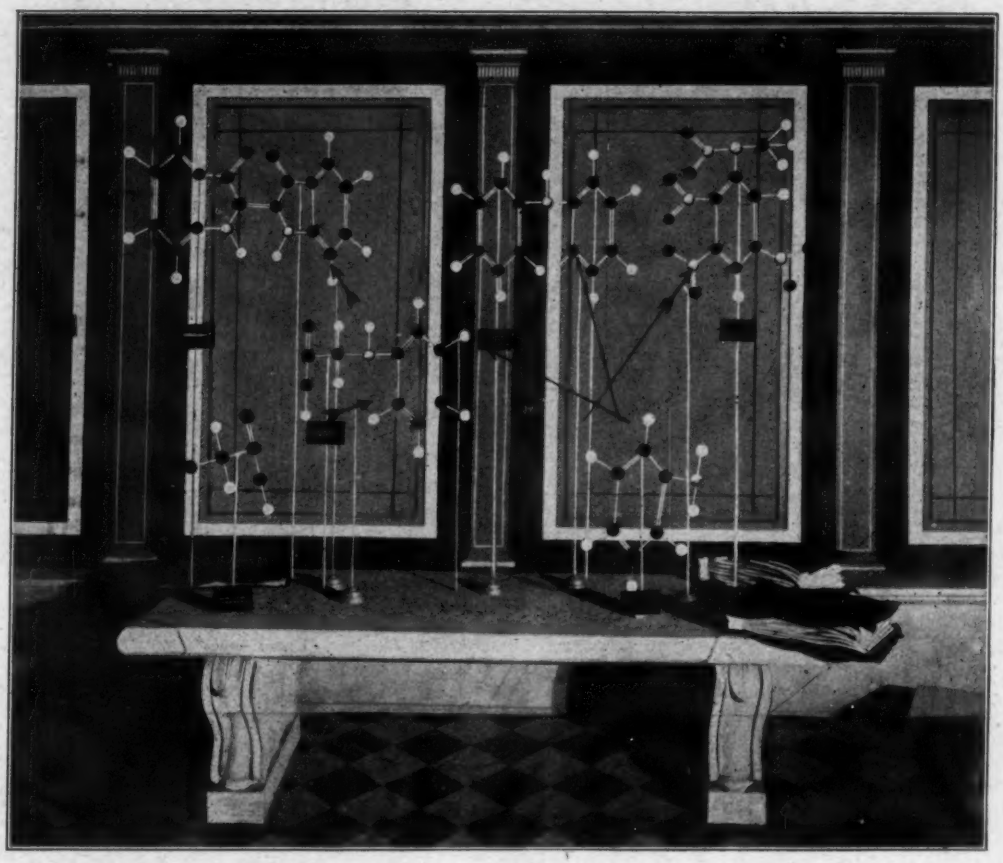
A YELLOW DYE seems far from possessing any relationship with mustard gas; phosgene, the poison, in no way resembles a beautiful pink dye or an intense violet; yet there is a connection, to show which it is necessary to dissect dyes and poison gases into the minute particles, the atoms, of which they are composed.

The exhibit of the Du Pont Company at the National Exposition of Chemical Industries held at the Grand Central Palace in New York during September was a great innovation from the usual type of display. Dyes and intermediates were shown, not as such, but by means of a very cleverly arranged set of models representing the structure of the molecules of the various substances.

DU PONT DYESTUFFS

It was quite striking to notice how easy it was for the visitors to follow the steps required for the manufacture of dyes and munitions and to appreciate how little difference there is in the structure of the resultant molecules.

E. I. DU PONT DE NEMOURS & CO., Inc., Dyestuffs Sales Department, WILMINGTON, DELAWARE



One of the models representing the structure of molecules of the various substances entering into the manufacture of dyes and intermediates.

—*at the Du Pont Dye Exhibit National Exposition of Chemical Industries*

and CHEMICAL WARFARE

THE decorative scheme, a Pompeian interior, carried out in a very striking though harmonious series of color panels, and stone furniture of the same period, made a very handsome background for the educational features of the exhibit.

The motive ot the Chemical Warfare Service Exhibit was identical except that the emphasis was placed on the relationship of poison gases to dyes and pharmaceuticals. The chart, which was used, was illustrated by samples of the materials in question.

Here again it was most striking to notice that the substances from which poison gases are made could be called upon to furnish useful products in time of peace.

A booklet, "Molecules and Man," distributed by the Du Pont Company, stated, in simple language, the underlying thought of both exhibits. To read it is to appreciate that national security is dependent on a well-established organic chemical industry, growing in active co-operation with the new national arm, the Chemical Warfare Service.

DU PONT DYESTUFFS

E. I. DU PONT DE NEMOURS & CO., Inc., Dyestuffs Sales Department, WILMINGTON, DELAWARE

"BRETON"
MINEROL "F"

For Knit Goods

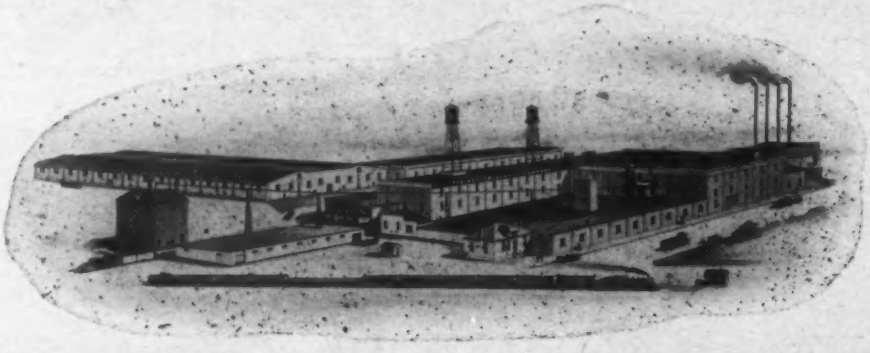
"*We* are pleased to say that adding the *Breton Minerol "F"* in our boil has given us a softer finish."

BORNE, SCRYMSER COMPANY

80 South Street, NEW YORK

BOSTON **PHILADELPHIA**

Works: Elizabethport, N. J.



VICTOR MILL STARCH

The Weaver's Friend

It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAMES H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience

Starch

EFFICIENCY and ECONOMY are the watchwords today. Modern mill men who hold to this motto are discarding ordinary, imperfectly refined starches and selecting those special types best suited to their individual conditions.

Some desire increased weight, all need increased Strength and better weaving qualities for the warp.

You know the result you seek.

We know and can provide the proper type of Starch.

EAGLE FINISHING

C. P. SPECIAL FAMOUS N

BLEACHING and FINISHING PLANTS have learned that "any old" STARCH or DEXTRINE will not do the work. To secure the proper "feel" the desired weight, the attractive finish, careful discrimination must be exercised in selecting

STARCHES and DEXTRINES

We manufacture all approved varieties.

500 MILL 400 MILL

BLUE RIVER CRYSTAL

DEXTRINES and GUMS

Corn Products Refining Co.

New York

Southern Office *Greenville, S. C.*

Starch

ALTHOUSE CHEMICAL CO.

MAIN OFFICE AND WORKS

500-540 Pear Street, Reading, Pa.

MANUFACTURERS OF

AMERICAN MADE DYESTUFFS

ACCO DIRECT GARNET

Easily soluble. Level dyeing.

The Grasselli Chemical Co.

DYESTUFF DEPARTMENT"

Works at:

GRASSELLI, N. J. ALBANY, N. Y.

SULPHUR COLORS: Black, Blue, Brown, Green.
Direct Cotton Colors, Acid and Chrome Colors
MONOPOLE BRILLIANT OIL
Bichromate of Soda Sodium Sulphide
Zinc Dust, Chemicals and Acids

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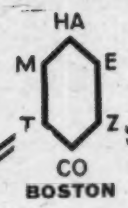
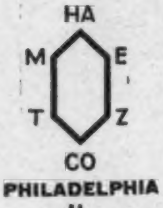
The Grasselli Chemical Company, Limited

Toronto Hamilton Montreal

Sole Selling Agents for Essex Aniline Works, Inc., Boston, Mass.





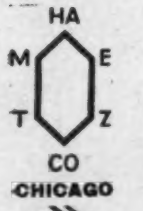
MORE than 40 years in the merchandising and manufacturing of dyestuffs has given us an insight into the intricacies of the many problems with which you are confronted and a wealth of information and experience which is always available to you.

We feel justified in soliciting your business by virtue of past performances and service, assuring you of our continued earnest desire to co-operate with and serve you.

Aside from the line of colors made in the U. S. by

CONSOLIDATED COLOR & CHEMICAL CO.
and
CENTRAL DYESTUFF & CHEMICAL CO.,

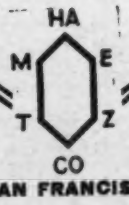
we will be glad to procure for you on Import Licenses that may be granted you by the War Trade Board such colors as are available and made by the Farbwerke-Hoechst, Farbenfabriken vorm. Fried. Bayer & Co., Leverkusen, Leopold Cassella & Co., Frankfurt, Kalle & Co., Bieberich, and Griesheim-Electron (Oehler) of Frankfurt. Licenses are granted for colors not made in the United States or not made in sufficient quantities or at reasonable prices. All products brought over on Licenses will be obtained by us at the lowest prices quoted for export to anyone or any Government by the manufacturers.



H. A. Metz & Company, Inc.

122 Hudson Street

New York



IMPROVE YOUR BLACK

"DEVELOPENE"

Turns a *Rusty Black* to a *Lustrous One.*

THERE is no slight of hand connected with it. Send a pair of stockings, a skein of yarn or a sample of fabric, which has been dyed black, washed but not finished, to our Laboratory.

We will finish it with "Developene" and return to you. There will be such an improvement you will immediately want "Developene" for finishing your goods.

MANUFACTURED ONLY BY

Kali Manufacturing Co.

MANUFACTURING CHEMISTS

1404-1410 N. Front Street **PHILADELPHIA, PA.** 1409-1413 N. Hope Street

Salicylic Acid Prevents Fermentation of Size

Sole Manufacturers of Hydroxy Oil and Kali Chlorine Neutralizer—the Superior Anti-Chlor. Formaldehyde.

ESTABLISHED 1815.

Arnold Hoffman & Co., Inc.,

PROVIDENCE, R. I. NEW YORK, N. Y.
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Importers and Manufacturers of

STARCHES, GUMS, DEXTRINE, ALIZARINE ASSISTANT, SOLUBLE OIL, SOAP

And Every Known Material from Every Part of the World for Starching, Softening, Weighting and Finishing Yarn, Thread or any Fabric.

Special Attention Given by Practical Men to Specialties for

SIZING, SOFTENING, FINISHING AND WEIGHTING

Cotton, Woolen and Worsted Fabrics combining the latest European and American Methods. We Believe There is No Problem in

SIZING OR FINISHING

That We Cannot Solve.

FORMULAS for the best method of obtaining any DESIRED FINISH on any fabric cheerfully given.

Soluble Grease

To make the stock yarn or warps Run Smooth, regardless of dyes that make the Cotton Fibre harsh.

BOSSON & LANE

ATLANTIC MASS.

ZAVON

The Super Solvent

The manufacture of ZAVON, the well known textile solvent, has been taken over by a new company and extensive factories have been put in operation at Danbury, Conn.

Here in the new factories ZAVON will be manufactured on an extensive scale to supply the textile industry with this superior solvent.

In the kier, the open kettle, or for all softening purposes, ZAVON is superior to soaps and soluble oils.

Send for working samples of ZAVON and learn the advantages of this effective solvent.

AV ZON TRADE MARK

ZAVON COMPANY, Inc.

Danbury, Conn.

1872 1920

CHEMICALS, DYESTUFFS COLORS, GUMS, OILS

FOR THE TEXTILE INDUSTRY

HEADQUARTERS FOR

ACID, BASIC, DIRECT, CHROME and SULPHUR COLORS; "CIBA" and "CIBANONE" FAST VAT DYES

A KLIPSTEIN & COMPANY

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JACQUES WOLF & CO.

Manufacturing Chemists & Importers

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For All Purposes

All Sizing and Finishing Products for Cotton

Bensapol
Bleaching Oil
Cream Softener
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Levuline
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White Finish

MONOPOLE OIL

Reg. Trade Mark No. 70991

EVERY OTHER POUND

Government statistics, just announced, show that we are making at least one-half—every other pound—of the Sulphur Black used in America.

This Company would not have obtained this position had it not made ATLANTIC BLACKS of such superior quality as to merit and justify the hearty recommendations of its customers for which we are sincerely grateful.

Our position has imposed upon us an unusual responsibility, which we expect to continue to meet to the satisfaction of both user and ultimate consumer.

Atlantic Dyestuff Company

WORKS: PORTSMOUTH and BURRAGE

MAIN OFFICE, BOSTON

NEW YORK PHILADELPHIA CHARLOTTE

CHICAGO PROVIDENCE

Boston **Philadelphia** **Chicago** **Columbus, Ga.**

Midland Blue R

Midland Vat Blue 5 B

Are Vat Blues of special interest to all manufacturers of fast color Ginghams and Chambrays—of good fastness to washing, chlorine and light—suitable for both raw stock and yarn dyeing. For the same trade we also have some new sulfur colors of extreme brilliancy.

Aniline Dyes and Chemicals, Inc.

Cedar and Washington Streets **New York**

Mercerizing Gassing Bleaching

We have a new and strictly modern plant for mercerizing, gassing and bleaching.

Located as we are in the center of the combed yarn spinning industry of the South, we are enabled to furnish you with the highest quality processed yarns in all numbers.

The American Processing Company

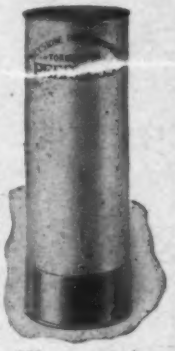
Mount Holly, N. C.

NEW YORK REPRESENTATIVE:
H. B. ROBIE,
No. 346 Broadway,
New York City.

SELLING AGENTS,
THE RIDDLE COMPANY,
Mariner & Merchant Bldg.,
Philadelphia.

THE TEST OF ACTUAL USAGE PROVES

that under the hardest of wear, most careless handling, and the most unusual conditions, Keystone Peerless Seamless Roving Cans *do* and *will* give longest service.



KEYSTONE "PEERLESS" SEAMLESS ROVING CANS

Send for our booklet showing full line of Keystone Holloware for mills.

Your mill supply house can fill your order.

Keystone Fibre Company

Box 148-C **Yorklyn, Delaware**

Southern Representative: Wilson Co., Greenville, S. C.
Philadelphia Office: 504 North American St.
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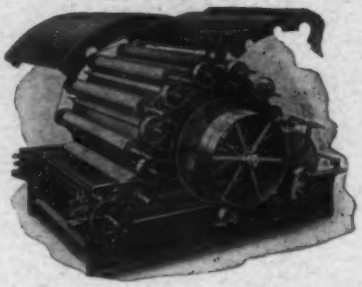
Smith & Furbush Machine Company

Philadelphia



Cotton Waste Card.

Card shown above has been recently designed. It is especially adapted for the making of Absorbent Cotton, Wadding, Batts or Felts of the better grade, etc. Similar cards in sets are used for Cotton Waste Yarns spun on the woolen principle. Ask for circular S-165.

Specialists in all kinds of Waste Machinery.

AUTOGYP

COTTON GOODS NEED NO BLEACHING

The AUTOGYP Process of Dyeing eliminates *all* Bleaching of Cotton Underwear, Gloves and Hosiery for Mock Egyptian and other light shades.

It simultaneously dyes to shade and eliminates all specks, motes, leaf and shives in one operation and in three hours' time by the use of AUTOGYP which is the registered name of the chemical used in the process. The process requires Three Hours' time instead of 15 and preserves tensile strength, saves shrinkage, steam, labor, water and all chemicals used in chloride of lime method. Let us prove our claims at our expense in *your* plant. Send for full information.

Write for full information.

SURPASS CHEMICAL CO., Albany, N. Y.

AUTO GYP

Process of Dyeing

=YOU=

Who have not used our RUBBER ROLLS should connect with us before you

=NEED=

to ship your next roll away.

"We Are Rubber Roll Specialists"

and

=OUR=

25 years' experience is at your command.

No matter for what purpose—if a rubber roll is required, you will find that our Rubber

=ROLLS= ARE THE BEST

The American Wringer Co.

Dept. F Woonsocket, R. I.

A New Proposition

LET us send you a Universal Counter on ten days' trial. It will record your production in yards or feet, either by stroke or revolution.

It is the simplest counting machine made. Steel construction, only one part to oil through a patented oil cup, which prevents the dust from entering the counter.

The machine will stand higher speed than any other counter on the market. Its number wheels are interchangeable. In this respect it is different than any other counter. The first wheel in the machine when wearing, as all unit wheels do, may be replaced by one of the other members or by one from the factory, thus making its life ten times longer than any other counting machine.

The Universal model may be used as indicated by the cut, by a crank or a pulley. Its readings cannot be tampered with. They are locked in position when not counting.

We are making this in two types for the textile trade. Our resetting model will cancel the reading back to naught by the turn of a thumb-knob on the left side of the counter. The non-resetting type cannot be changed except by removing the seal to the cover and replacing the wheels. It is the best and cheapest counter on the market owing to its rigid construction and uniform application.

Write for prices on quantities. By request our representative will call on you.

PRECISION MACHINE CO., 415 Chestnut St., Milwaukee, Wis.
Southern Representative, Gordon Lewis, Atlanta, Ga.

UNIVERSAL COUNTERS

WHILE YOUR MILL IS MAKING SUBSTANTIAL PROFITS

is the time to equip with loom-harness whose service is measured from year to year instead of month to month.

"DUPLEX" FLAT STEEL HARNESS can show records of ten to fifteen years service at an average cost of ONLY 10c to 12½c PER SHADE PER YEAR with high cloth production and low percentage of seconds.

Let us quote you.

STEEL HEDDLE MFG. CO.
GREENVILLE PHILADELPHIA PROVIDENCE
Southern Office
111 Washington St. Greenville, S. C.
Hampton Smith, Southern Manager.

Getting the Output With Smaller Payroll

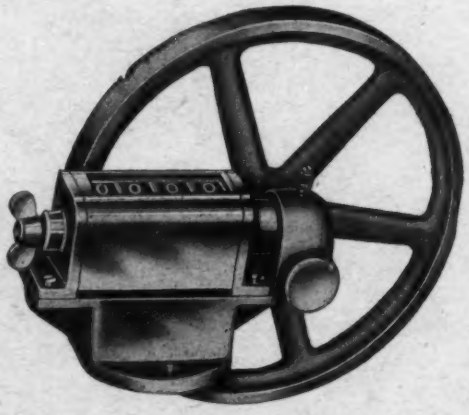
Can you produce goods for the present market without a reduced manufacturing cost? — a bigger day's work **per operative** as fewer hands are employed?

Veeder Counters will enable you to get a given production with a reduced working force, just as they helped mills get a bigger production from the **same** working force.

Under *every* condition there's more to show for the hours of work, when the production of a machine and the productive value of the worker goes down on a

Veeder COUNTER

The Set-Back Yardage Counter below measures the yardage of output of finishing and inspection machinery, where makeshift devices or costly measuring instruments have been used.



The straight-face friction wheel ½ yard in circumference is geared so it measures in units of one yard; will not slip on the finest fabrics. Counter reads in plain figures, and can be set back to zero from any figure by turning knob once round.

Write for copy of the Textile Counter booklet, showing instruments for all textile machines where counters are profitable to the user.

The Veeder Mfg. Co.
6 Sargeant St., Hartford, Conn.

TAPE for spinning and twisting frames is a staple, and there's not much to say about it, but you can depend on it that

KNIT-GOOD SPINNING TAPE

is as good as can be bought—an honest product, the finest woven, the smoothest edges. The quality and stamina is there, and you have only to use it to be convinced of its superiority. Sample upon request.

THE TAPE MAN SAYS

"SOME fellows say one tape's as good as 'nother, but that's 'cause they never used K. G. Tape."

Knit Goods Specialty Co., Chicopee Falls, Mass.

BIGGER BUSINESS!

There are some 10,000 Textile Mills in the United States and Canada, with 15,000 dealers interested in the Textile Line. Do you realize what an enormous field this is for producing business?

Possibly you have a Textile Directory and make little use of it because it takes so long to find what you want, but have you ever tried DAVISON'S TEXTILE BLUE BOOK?

Thumb-Index Labels enable you to instantly refer to all sections, and owing to its quickness of reference, the habit grows to refer often. Time is money.

DAVISON'S TEXTILE BLUE BOOK undoubtedly is referred to three times as often as any other Textile Directory because of these labels, and owing to this, it requires nearly one month for us to fill the advance orders on the new edition.

Davison's Textile BLUE BOOK is 22 directories in one volume.

Cotton Mills
Woolen Mills
Worsted Mills
Carpet Mills
Silk Mills
Knitting Mills
Jute and Linen Mills
Canada Mills
Dyers, Finishers, Etc.
Mills with Dye Houses
Commission Merchants

Cotton Goods Converters
Yarn Dealers
Raw and Art Silk
Cotton Dealers
United States and Foreign
Wool Dealers
Rag and Remnant Dealers
Waste Dealers and Mfrs.
Linter Dealers
Mattress Makers
Textile Supplies
Classified Directory of Mills

New Edition 33rd Annual; now ready

Office Size $7.50 **Salesman's Dir ectory $4.00** **Handy Size $5.00**

DAVISON PUBLISHING CO., 50 Union Square, NEW YORK

FIG. 27

This truck embodies all the advantages of Lane Baskets, plus our specially designed Thread guard Casters which are, IN FACT, NON- CLOGGING. Furnished in either stationary or swivel frame style, of generous diameter and tread.

STURDY Lane Canvas Baskets

FIG. 20

All our Baskets made from Lane Duck of our own weaving.
By use of strictly long staple cotton and approved modern methods, unusually high tensile strength and wearing qualities are obtained.

W. T. LANE & BROTHER, Manufacturers **Poughkeepsie, N. Y.**

Leatheroid MILL RECEPTACLES

The Truly Permanent Fibre Cars

Leatheroid No. 3 All Fibre Car. Solidly Built. All wearing surface protected.

Leatheroid Cars, as all Leatheroid receptacles, are made of "Leatheroid"—the most durable and toughest, smooth fibre known, and the other parts are chosen with care, and put together right.

Leatheroid Cars stand the heaviest loads and roughest usage day after day, year after year, and then show very little effects of wear.

Leatheroid Cars, Roving Cans, Boxes, Baskets, etc., are made in all sizes and shapes.

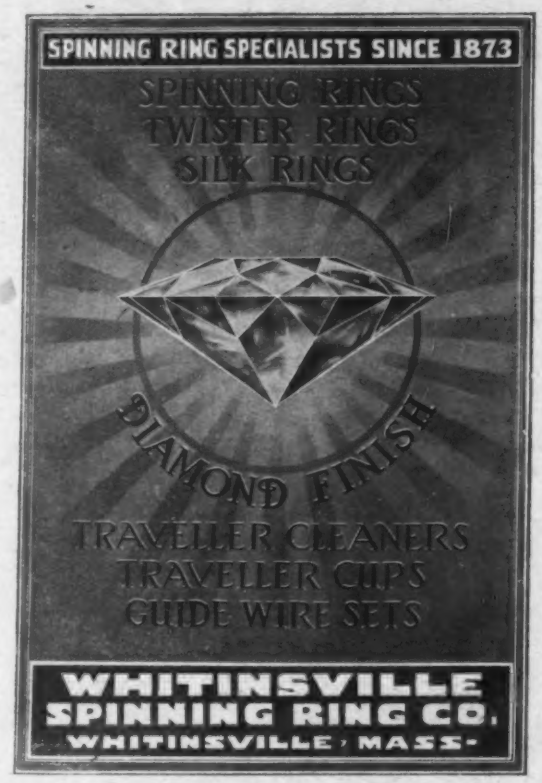
Sold by Leading Southern Mill Supply Houses.

Rogers Fibre Company

Leatheroid Sales Division

1024 Filbert Street, Philadelphia

Leatheroid No. 2 Steel-Clad Car. Nothing Equals it for Construction, Finish and Serviceability.



S. S. & F. Co., Inc.

CHARLOTTE, N. C.

The S. stands for Southern, the S. & F. for Safety First

The only Flyer Presser Manufacturers in the South. Does your machinery need OVERHAULING? Does your Steel Rolls, Flyers, Spindles, etc., need REPAIRING? Are you NEEDING Flyers, Flyer PRESSERS, Rings of any kind, Guide Wires or any other supplies? If so, this is YOUR BUSINESS — OUR BUSINESS IS SUPPLYING these needs.

Southern Spindle & Flyer Co., Inc.

CHARLOTTE, N. C.

W. H. MONTY, - Pres. and Treas.
W. H. HUTCHINS, - Vice-Pres. and Sec.

The Palmer Adjustable Thread Guide

For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

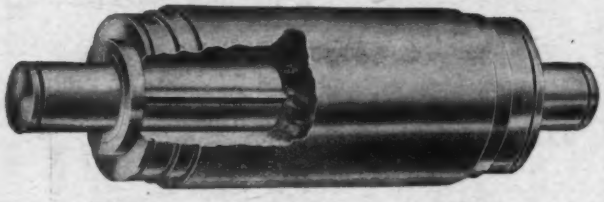
Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut

PERKINS
Patented SPLINED CALENDER ROLLS

"RESISTANT BUT RESILIENT"



Their Superiority Is Due To Unique Advantages!

When you purchase a Perkins Roll, you do so with a feeling that you are getting the best that can be bought, not only in manufacturing quality—for they are the result of 40 years' experience—but in unique features that can be found only in the Perkins.

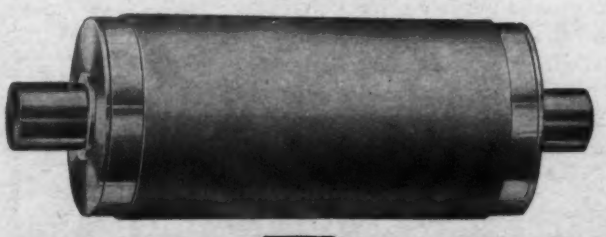
All are fitted with the Perkins Patented Spline which prevents slipping or turning on shaft. Let us tell you all about the advantages of the Perkins and what other well known finishers are gaining from their use.

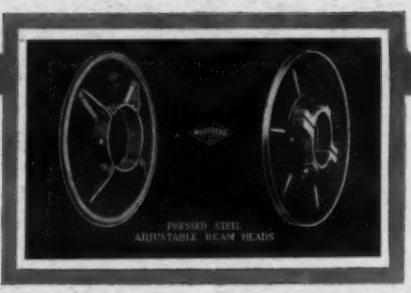
Every Perkins Roll is guaranteed. Your old rolls can be refilled to gain special advantages of the Perkins.

The line includes Paper Rolls, Husk Rolls, Cotton Rolls and Combination Cotton and Husk Rolls for Calenders, Mangles, Schreiner Machine and General Finishing Work.

Write today for information and prices.

B. F. PERKINS & SON, Inc.
HOLYOKE, MASS.





MOSSBERG

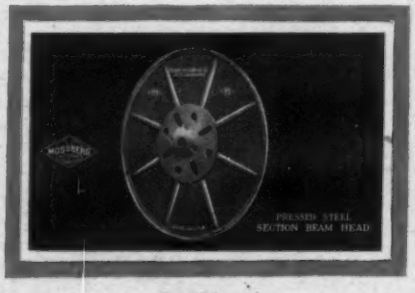
STEEL REELS, BEAMS AND SPOOLS

BEAMS, Spools and Reels made of Pressed Steel are decidedly superior to those made of wood or cast-iron. They are stronger and lighter.

Mossberg Pressed Steel Construction is being utilized by mills the country over. Mossberg Equipment is saving time and money wasted by frequent changing and purchasing.

Write for interesting catalog on Pressed Steel Equipment. It is instructive and valuable.

WALTER I. TUTTLE
President and General Manager
FRANK T. CHASE
Treasurer and Sales Manager
EVERETT L. FORD
Secretary and Superintendent



FRANK MOSSBERG COMPANY
WRENCHSMITHS FOR 20 YEARS
ATTLEBORO MASSACHUSETTS

SPOOLS

Let us submit prices and samples on WARPER and TWISTER SPOOLS. Plain wooden head and metal shield. A list of Southern Mills using spools given on request.

Greenville Spool & Mfg. Company

Greenville, S. C.

DON'T LET THEM GET YOUR PLANT

Protect your plant against fire—protect it from possible destruction by the evil designs of plotters.

The one safe way is to have your watchman on the alert every minute. Don't, however, depend entirely upon the watchman. Install a dependable watchclock system and watch the watchman.

The Eco Watch-clock is an exclusive specialized product of thirty-six years standing.

ECO CLOCK COMPANY
196 Congress St., Boston, Mass.
24 Cortlandt St., New York
Southern Department: 23 Walton Bldg., Atlanta, Ga.

AMERICAN SUPPLY COMPANY
PROVIDENCE, R. I.

MANUFACTURERS OF

Loom Harness,
Weaving Reeds,
Oak Tanned Leather
Belting, Strapping,
Etc.

We make a specialty of Harness for Warp Drawing Machines

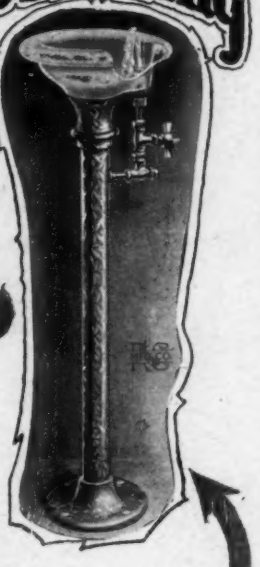
NOTE—No orders too large for our capacity.
None too small to receive careful attention.

TEXTILE SCALES

No. 5005. Gives yards per pound
No. 5000. Gives ounces per running yard
No. 5010. Gives yarn number for cotton yarns
No. 5015. Gives yarn number for woolen yarns
Used by U. S. War and Navy Depts.
CHRISTIAN BECKER'S ANALYTICAL AND SILK BALANCES

THE TORSION BALANCE CO.
Main Office, 92 Reade Street, New York
FACTORY: Jersey City, N. J.
BRANCHES: 31 W. Lake St., Chicago. 49 California St., San Francisco.

A Sanitary Drinking Fountain BEYOND Criticism



SUCH was the comment of a drinking fountain expert to whom our fountain was submitted.

In the "VERTICO SLANT" Sanitary Drinking Fountain there is no opportunity for contamination between the crest of the jet and the nozzle, as all the water falls to one side.

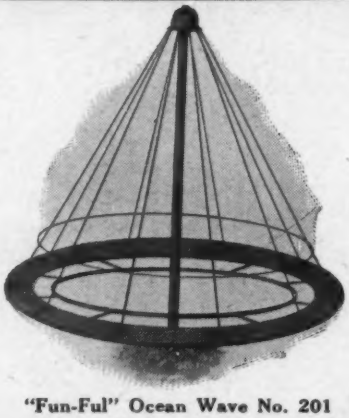
Copious drinking as the lips touch the stream at a point where the water loses its momentum.

The location of the nozzle is such that it cannot be touched with the lips.

Write for Details.

RUNDLE-SPENCE MFG. CO., Milwaukee, Wis.

Our new 74-page Drinking Fountain Catalog "C" is ready for distribution.



"Fun-Ful" Ocean Wave No. 201

THE FUN FUL LINE
PLAYGROUND EQUIPMENT

NOW IS THE TIME

to plan your playground program for next spring.
ORDER YOUR EQUIPMENT SOON
for Spring delivery, thus avoiding disappointments in receiving goods on time.

"EVERYTHING FOR THE PLAYGROUND"
WRITE FOR CATALOG NO. 5 TODAY.

HILL-STANDARD CO

General Sales Office: ANDERSON, INDIANA.
Factories: ANDERSON, IND. KOKOMO, IND.
Edward Ferger, Southern Representative,
276 Lucile Ave., Atlanta, Ga.

F. H. Thomas Co.
Boston, Mass.

A First Aid Room or an Emergency Hospital For Your Employers will

Decrease your liability for industrial accidents.

Decrease time lost through temporary incapacity of your workers.

Decrease needless suffering from minor injuries and prevent minor injuries from developing into serious cases.

Increase morale and loyalty among your employees and give you opportunity to show your interest in the welfare of your workers.

The F. H. Thomas Company has equipped First Aid Rooms for over four hundred factories and mills, who have appreciated these facts, including the following Southern mills:

WINSBORO MILLS Winsboro, S. C. **WATEREE MILLS** Camden, S. C. **WHITNEY MILLS** Whitney, S. C.

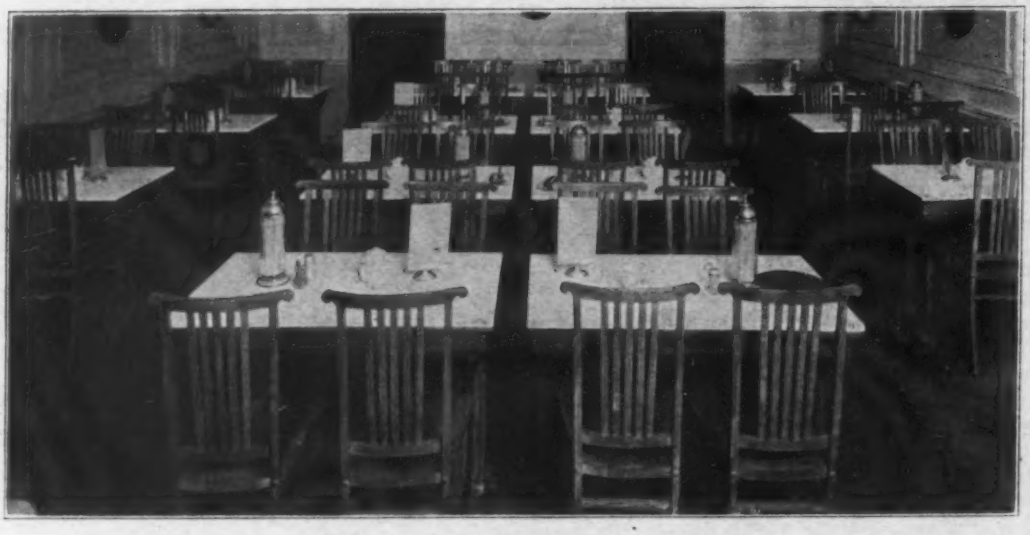
A modern Thomas equipped emergency room will put you also among the progressive owners who are saving money and advancing the conditions of their workers.

Write for information and advice, stating, if possible, the number and nature of your accidents. Southern Representative.

F. H. Thomas Co.
689-691 Boylston St.
Boston. Mass.

THE WRIGHT EQUIPMENT

For Your Mill or Factory



A CLEAN SANITARY DINING ROOM

We build special equipment for your cafeteria, kitchen and dining room complete in every detail. Shipments made promptly. Write for information how to increase your production.

THE WRIGHT COMPANY, Inc. 185 Peachtree St., Atlanta, Ga.

IMPORTERS—JOBBERS

Hotel, Restaurant and Institution Equipment

THE WRIGHT GOODS THE WRIGHT PRICE THE WRIGHT SERVICE

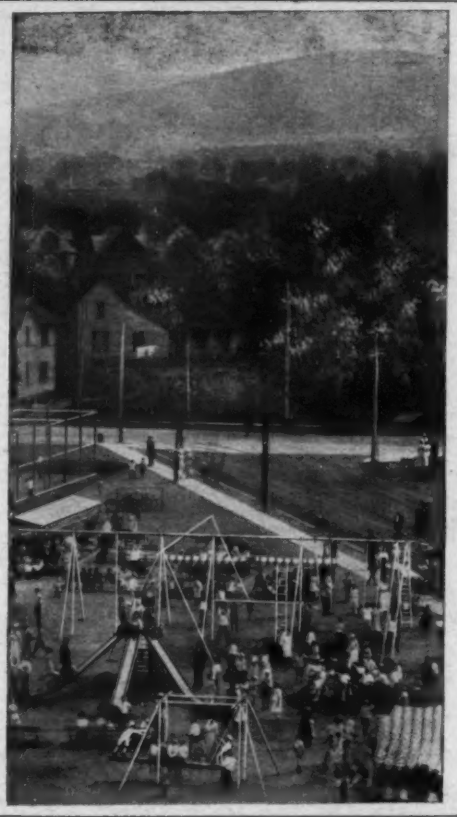
"Cotton Mill Machinery Calculations"

EVERY Textile Man should have these reference books. They cover in a detailed and thorough manner all calculations necessary to be made on any cotton mill machinery manufactured in the United States and constitute one of the best references on the subject obtainable.

The two volumes are illustrated with 45 diagrams and contain 21 reference tables.

As the value of a book lies in its contents and not in a fancy cover, we have put these two volumes out in a strong, serviceable paper binding. You can secure them in conjunction with a subscription to COTTON.

Write for circulars and full information.



For the Happy Children of Contented Parents

When you provide happiness and enjoyment for the children of your employees it can be nothing else than a certain indication that you really have their interest at heart. Install Medart Playground Equipment in your community —watch the enjoyment it brings to the children—and, watch the increased contentment among your workers when they know that you are something more than just "the boss."

MEDART
PLAYGROUND EQUIPMENT

For 50 years the Medart Company has been manufacturing and perfecting gymnasium apparatus for vigorous men—an experience that has especially fitted it for the leadership it has always maintained in the development of playground equipment best suited to promote those bodily and mental qualities which mold today's childhood into tomorrow's man- and womanhood.

Catalog "L" fully describes Medart Playground, Swimming Pool, Gymnasium and Locker Room Equipment. Contains valuable suggestions for playground installations. It will be sent gladly to anyone requesting it.

Fred Medart Manufacturing Co.

Potomac & DeKalb Sts. St. Louis, Mo.
Gordon Lewis, District Manager, Walton Bldg., Atlanta, Ga.

STYLE K MIDGET ORCHESTRION

One of our small styles that is especially attractive where a small instrument is desired.

SEEBURG

Self Playing Musical Instruments are wonderful entertainers.

For Your

Recreation Rooms, Cafeterias, Motion Picture Theatres

Simplicity—Reliability—Service

Scofield Auto-Music Company

CHARLOTTE, N. C.

Special agents for the Southeast.

THIS
CONVINCING COMPARISON
SHOWS THE SUPERIORITY OF

SIGNODE SYSTEM

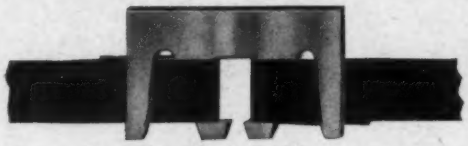
OVER THE USUAL BALE TIE.
LET US SEND YOU FULL DETAILS
SIGNODE SYSTEM, INC.
CHICAGO ATLANTA
Boston New York Philadelphia Toronto San Francisco

5/8" x .015 SIGNODE TIE	COSTS 12 % LESS PER FOOT	HOLDS UNDER 800 LBS. PULL	NO "SPIDER" TO INJURE HANDS
Compared with			
USUAL 5/8" x .017 BALE TIE	COSTS 12 % MORE PER FOOT	BREAKS UNDER 500 LBS. PULL	DANGEROUS "SPIDER" OFTEN PRESENT

Cypress Tanks
Wooden Packing Cases
ALL STYLES
Manufactured from
GEORGIA PINE POPLAR CYPRESS
WHITE PINE and GUM
Your Inquiry Solicited
Hightower Box & Tank Co.
Corner Humphreys and Glenn Streets,
BOX 1025 ATLANTA, GA.

One Man Handles All Beams
Our portable elevators have many applications and serve many purposes around the mill. The design shown above is saving time and labor for mills, as with it one man can handle the heavy warp beams, move them about from place to place and set them in position on the loom.
Without obligation, one of our representatives will gladly call on you and tell you frankly what our equipment can do for you.
REPRESENTATIVES FOR
Economy Engineering Co., Tiering Machines.
Automatic Transportation Co., Storage Battery Trucks.
Barrett-Cravens Co., Lifting Platform Trucks.
Standard Conveyor Co., Conveying Systems.
Berger Mfg. Co., Steel Lockers and Bins.
"SERVING SOUTHERN CONCERNS"
J. D. COLLINS Ninth Floor Grant Bldg. ATLANTA, GA.

VOGEL
PATENTED
Frost Proof Closets
350,000 giving satisfaction. Save Water; Require no Pit; Simple in the extreme. The most durable water closet made. In service winter and summer.
No. 1
Enameled roll flushing rim bowls.
Heavy brass valves.
Strong hardwood seat. Galvanized tank.
Malleable seat castings will not break.
Tested under hydraulic pressure before leaving factory.
ASK YOUR JOBBER
JOSEPH A. VOGEL CO.
WILMINGTON
DELAWARE



Acme No. 9 Bale Buckle

USE

ACME

Cold Rolled Bale Ties

with

Acme Bale Buckles

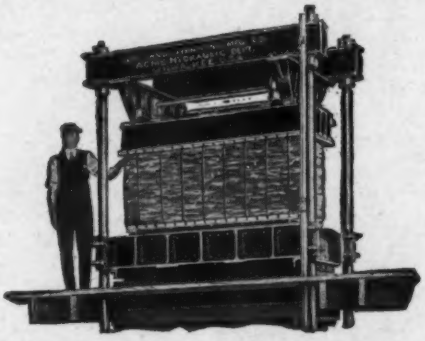
or

Acme Seals

Acme Steel Goods Co., Mfrs.

Atlanta: 10 Tift St.
Brooklyn: 167 41st St.
Chicago: 2840 Archer Ave.
New Orleans: Queen & Crescent Bldg.

Acme Nailless Strapping with Seal applied



HAVE YOUR BALERS DOORS?

Have you ever stopped to figure out that the biggest part of the floor space required by your balers is occupied only when the doors are open? And, if you'll take particular notice, you will find that most of the trouble with your balers is centered around the doors. Then, too, you can't overlook that it requires time and labor to unfasten the locks and open and shut the doors. It was because of these facts that we designed the

ACME BALER

without doors. As a result, the Acme Baler requires 75% less floor space, and turns out more bales per day.

Write for details.

Galland-Henning Mfg. Co.

Milwaukee, Wis.

Southern Sales Representatives
THE LOVINGOOD COMPANY, Atlanta, Ga.

LABOR-SAVING DEVICES

FOR THE

Shipping Room

—Series No. 6—

STENCIL-BOARD

Did you know that certain grades of stencil board dull and injure dies and punches? Why not purchase from us the kind of board you should use at the same or lower price? We carry five different styles in stock at all times and furnish you with proper size for any model stencil machine you may be using. Write for samples and prices.

INDELIBLE STENCIL INK

Ready for instant use and guaranteed to give perfect satisfaction. Put up in 1, 2, 5 and 10 gal. cans.

Price Low—Quality High.

IMPROVED FOUNTAIN BRUSH

Extra Tip

Price complete $3.00 each.
Extra Tips, each, 85 cents.

Made of brass heavily nickeled.

ADDRESS SUPPLY DEPARTMENT

J. R. Regnas & Co.

10-14 TIFT ST.
ATLANTA, GA.

Automatic Weighing

SHOWING MODERN METHOD OF WEIGHING WITH A KRON PORTABLE COTTON BALE SCALE

Contrast this with the old wasteful method. Just as fast as the men can put the load on the Kron platform it is weighed accurately with no adjustment of weights and no mental calculations, and the scale is ready for the next load. Figure for yourself what this means in the saving of time and labor.

Save

TIME—LABOR—MONEY

by installing

"Load and Look"

Kron Scales

AUTOMATIC Made in U. S. SPRINGLESS

All Metal Construction

There's a Kron for Every Weighing Purpose

ALL TYPES—ANY CAPACITY—Dormant or Portable, Hanging Pan Types, Overhead Track Scales, Suspension Crane Scales, Etc.

Write for a copy of our new catalogue.

American Kron Scale Co.

430 East 53rd St., New York

Branch Offices & Service Stations in Principal Cities

CANADIAN KRON SCALE CO., MONTREAL, CAN.

Would You Be Reluctant to Accept the Insurance Company's Settlement?

Yet, that's all you would get if your factory was wiped out.

The time lost—the business you might have done—is something that does not enter into any insurance adjustments.

But the insurance companies—all of them—are keen to prevent fires. That is why they offer reduction of premiums on property protected by

Richards-Wilcox Automatic Fire Door Hardware and Fire Doors

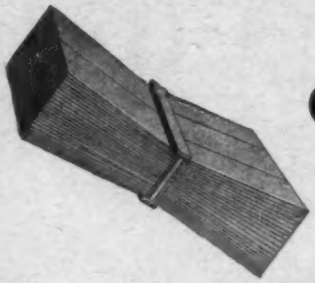
We will readily tell you of millions of dollars worth of property saved from fire by R-W Fire Door Equipment.

Whatever your requirements we can furnish the proper equipment.

Richards-Wilcox Mfg. Co.

"I Have Yet to Learn Done That Is Best"

CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA — AURORA, ILLINOIS, U.S.A. — BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO — LONDON, ONT.



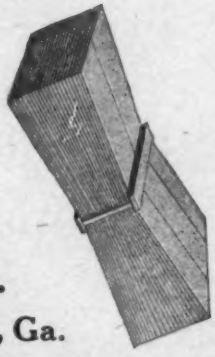
"Never-Rot" Creosoted Pine Shingles

Give Longer Life at Less Expense Than the Highest Price Untreated Shingles

Our "NEVER-ROT" creosoted pine shingles are thoroughly impregnated with pure refined creosote by our special Hot and Cold treatment, which prevents their decay, and by its waterproofing action lessens warping and shrinking.

Reduce Your Annual Roofing Costs 60% by the use of "Never-Rot" Creosoted Pine Shingles

Write us for carload prices delivered F. O. B. cars at your city.



GULF STATES CREOSOTING CO.

P. O. Box No. 1022 **Atlanta, Ga.**

COOLEDGE HYGRADE

C H

THE CH LINE

"Best for the Southern Climate"

C-H Bungalow Shingle Stains
For Shingle roofs and weather-boarding

C-H Home Paints
For Exterior and Interior Use

C-H Perma White
Interior gloss mill paint

Let us Send Booklet and Color Card Also names of Mills and Mill Contractors that have used our paints

"IMMEDIATE SHIPMENTS"

Just write on your letter-head— "Send Your Catalog"

F. J. COOLEDGE AND SONS

ATLANTA GA. SAVANNAH

Manufacturers of paints, stains and varnishes
Jobbers of window and building glass, and wallboard

H. NEWTON MARSHALL CO.

PAINTING CONTRACTORS

A painting organization with a long record of large undertakings and successful achievements. The benefits of our twenty years of mill and factory painting are at your service. Will you allow us to give you for a minimum cost, a maximum of returns?

Our belief is that we have reduced the painting of mill interiors to a science. We have so standardized the handling of painting equipment that it can be erected quickly; the painting is carried on in a manner not to interfere with the running of machinery or the work of the operatives; and the whole work is so handled that it does not expose to injury the goods in process of manufacture.

In connection with painting, the item of repairs to mill villages is one of considerable importance, and one which can be most economically handled at the same time and under one contract. We have handled several mill communities in this way, securing in all cases, results that have been most satisfactory.

Plants now being done or recently completed

Bellwill Mills	Wilmington, N. C.
Wateree Mills	Camden, S. C.
Winnsboro Mills	Winnsboro, S. C.
Pacific Mills	Columbia, S. C.
Hogansville Mills	Hogansville, Ga.
Dunson Mills	LaGrange, Ga.
International Cotton Mills	LaGrange, Ga.
Indian Head Mills	Cordova, Ala.

To any of the above we refer you

Northern Office
522 Harrison Avenue
Boston, Mass.

Southern Office
Trust Co. of Geor ia Bldg.
Atlanta, Georgia

It's No Longer Necessary to Spend Big Money For New Roofing

(Registered U. S. Patent Office)

Why go to the expense and trouble of installing new roofing with a sixteenth-inch coat of GILSO-CEMENT will put the worst roof in a better-than-new condition—weather-proof, water-tight, notwithstanding the elements regardless of how severe.

This perfect roofing material has been standardized by practically every railroad in the United States for old roof renewing purposes. This proves that it has all the qualities necessary for making a new roof of an old base.

GILSO-CEMENT is about five times thicker than paint—a combination of the best preservatives together with asbestos fibre and oils. One coat the thickness of 1/16 inch will cover the old roof, thoroughly sealing up every crack and crevice, nail holes and breaks, forming a tough, one-piece covering which under all conditions, will remain tough and elastic, absorbing all contraction and expansion. Its non-drying oils thoroughly saturate the old base, thus preventing decay, completing its qualifications for making a new roof of an old base.

GILSO-CEMENT can be applied to any roofing, whether gravel, composition, tin or iron, regardless of the conditions of the roof. One coat will place it in a better-than-new condition.

GILSO-CEMENT will prove a good investment for coating a new composition roof, as it will protect the felt from the elements, prevent cracking, and make expense for frequent painting or roofing repairs unnecessary.

GILSO-CEMENT is highly recommended by engineers for painting structural iron work on bridges, water towers, smoke-stacks, etc., owing to its not being affected by acids or gases. It protects and preserves the metal surface better than any other material known.

Let us quote prices. Testimonials furnished upon request. Write us today.

The High Grade Manufacturing Company

Cleveland, Ohio

Seri-Vane Fans

Cut shows a compact heating unit as regularly installed by us for large Factory and Industrial Heating and Ventilating units. The large range of adaptability for our fans, heaters, air washers, etc., is clearly brought out in catalog No. 70.

We have lately prepared a special treatise devoted to paper drying and kindred products which we think will prove of value to those manufacturers who desire to increase their production and the quality at the same time. Ask for Bulletin No. 11.

If we cannot truthfully show you where a SERI-VANE FAN can do your work better and save you money at the same time, we say so frankly. We do not try to force a sale but gladly make any suggestions or recommendations which our experience knows to be practical and feasible, and then allow the customer to decide freely from the facts presented. There is positively no string attached to our engineering advice.

HAVE YOU A FAN PROBLEM? IF SO, WRITE

The New York Blower Company

608 S. Dearborn Street **CHICAGO, ILLINOIS**

Branch Offices in Principal Cities

Factory, and Weave Shed with 42-foot Span Concrete Saw-tooth Roof. Designed and constructed for Sidney Blumenthal & Co., Shelton, Conn.

Fifth Consecutive Contract

YOUR first contract is the most difficult for us to secure. Sidney Blumenthal & Company, Inc., have awarded us five consecutive contracts for new structures to accommodate their increasing business. The side wall of their newest building (illustrated) is temporary, anticipating another large addition.

Our organization did the designing, engineering and construction on all of these jobs.

THE ENDICOTT-JOHNSON WORKERS have chosen us to do the designing, engineering and construction of all concrete buildings to be erected by them DURING 1920.

THOMPSON & BINGER
INC.
ENGINEERS & CONTRACTORS
CONSULTATION - DESIGN - CONSTRUCTION

NEW YORK
280 MADISON AVE.

SYRACUSE
GURNEY BUILDING

CONCRETE

THE PAINT THAT SUN SURFACES WALLS

Makes Walls Diffuse Light Instead of Absorbing It

WALLS painted with any dark color or walls that have become soiled or dust coated absorb light like a sponge instead of reflecting it like a mirror, as they should do.

Hampden *Sunray* Mill White Oil Paint coats walls with a tough, elastic, snow-white surface which diffuses instead of absorbing light, so that practically all the light that enters through windows is put to work instead of being wasted. Moreover, dirt will not easily cling to this paint because the surface is so smooth and free of brush marks. It is washable too.

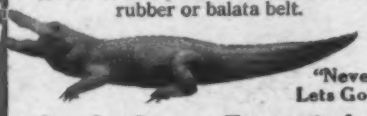
Deliveries direct from Factory or Local Dealers. Send for Booklet "WHITEST WHITE."

HAMPDEN PAINT & CHEMICAL CO.
Makers of good paint for 68 Years
Division E **Springfield, Massachusetts**

The World's Greatest Belt Lacing

Best for Every Service

Consider carefully the 100% efficiency of Alligator Steel Belt Lacing in satisfying your requirements. You will find it best on every kind of leather, cotton, rubber or balata belt.



"Never Lets Go"

Simple, Strong, Economical—Preferred by All Who Know It

Everywhere in Industry, where belting is required, Alligator Steel Belt Lacing is known and preferred.

Short, flexible joint insures smoothness of operation. Sectional Steel Rocker Hinge Pins (patented) form frictionless "rocker" for the flexible joint. In damp or heavy work, where other lacing pulls out, Alligator Steel Belt Lacing *holds*.

ALLIGATOR

TRADE MARK REG. U.S. PAT. OFFICE

STEEL BELT LACING

Nothing Needed But a Hammer

In a working time of less than three minutes, the average belt can be laced with Alligator Steel Belt Lacing. No special skill or training needed. No tool but a hammer to insure a perfect joint. Consider this saving in help, time and money over other methods of lacing.

Alligator Steel Belt Lacing saves the belting because the pull comes against the edge of the teeth and not the flat. It becomes a permanent part of belt—does not pull out—and replacements even in hardest use are practically unknown.

FLEXCO-LOK STEEL LAMP GUARDS

A mechanically perfect guard—sold at a decided saving to a purchaser. All sizes, with or without reflectors, for standard brass or weather-proof sockets. Either portable or stationary types, with patent self-retaining lock screw or plain round head screw. Not stocked in London.

A Large Surplus of Strength

Note the *double staggered teeth* (shown in illustration)—they give the extra strength to Alligator Lacing.

Ask Your Jobber—or Write Now for Prices, Samples and Full Details

Write today—or use the coupon. Let us quote you prices and send samples and full details regarding Alligator Steel Belt Lacing. Made for belts of all sizes from tape to five-eighths inch thickness.

Hundreds of thousands of men the world over are now recommending and using no other lacing than Alligator—The World's Greatest Belt Lacing. It will be a big saving and a wonderful convenience for you. Use the coupon. Tear it off now. Write us at once.

FLEXIBLE STEEL LACING COMPANY
4619 Lexington Street Chicago, Ill., U. S. A.
135 Finsbury Pavement, London, E. C., England

Send This Coupon!

FLEXIBLE STEEL LACING COMPANY.
4619 Lexington Street, Chicago

Gentlemen: Kindly send price lists, sample and complete details of Alligator Steel Lacing. Also send prices and descriptions of Flexco-Lok Lamp Guards.

Check if Desired.....

Firm Name.....

Address.....

Name of Inquirer.....

(Tear This Coupon Out—Send it Today)

SAVE WASTE

Ball Bearings on the measuring rolls of slasher warpers will do it.

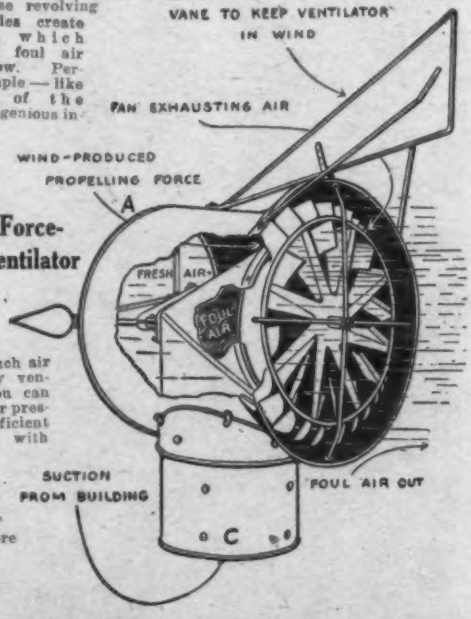
AldricH MachinE

Ball **WorkS** Bearings

Greenwood, S. C.

The Wind-Mill Principle Applied to a Ventilator

Note the illustration! The fresh air passing over the funnel comes in contact with the small outer blades, thereby propelling the wheel to which the large inner blades are also attached. These revolving inner blades create a vacuum which sucks the foul air from below. Perfectly simple—like so many of the world's ingenious inventions. The



Carlisle Force-Draft Ventilator

displaces from 5 to 6 times as much air as ordinary ventilators. You can replace your present inefficient Ventilators with fewer and smaller sized "Carlisles" and get more ventilation! Write for descriptive folders.

CARLISLE & GALE CO.

569-577 Albany St. Boston, 18, Mass.

A partial list of OUR CLIENTS

What better evidence of ability and reliability can a service organization offer, than a clientele of highly successful manufacturers? Performance must equal promises given to retain confidence year after year.

The following list is representative. Space does not permit us to print the names of the many other clients whom we serve.

Aberfoyle Manufacturing Co., Chester, Pa.
Anchor Duck Mills, Rome, Ga.
Androscoggin Mills, Lewiston, Maine
Ansonia O. & C. Co., Ansonia, Conn.
Aurora Cotton Mills, Aurora, Ill.
Bancroft, Joseph, & Sons Co., Wilmington, Del.
Bates Manufacturing Co., Lewiston, Maine
Bay State Cotton Corp., Lowell, Mass.
Bemis Brothers Bag Co., St. Louis, Mo. also Boston, Mass.
Blackstone Mfg. Co., Blackstone, Mass.
Boston Manufacturing Co., Waltham, Mass.
Columbus Mfg. Co., Columbus, Ga.
Dallas Manufacturing Co., Huntsville, Ala.
Dallas Cotton Mills, Dallas, Texas
Dwight Manufacturing Co., Alabama City, Ala. also Chicopee, Mass.
Eagle & Phenix Mills, Columbus, Ga.
Grana, Antonio Lima, Peru
Great Falls Mfg. Co., Somersworth, N. H.
Griffin Manufacturing Co., Griffin, Ga.
P. H. Hanes Knitting Co., Inc. Winston-Salem, N. C.
Hankow Cotton Mill Hankow, China
Henderson Cotton Mills, Henderson, Ky.
Hill Manufacturing Co., Lewiston, Maine
Hoosac Cotton Mills, North Adams, Mass.
Hua Hsin Mill, Tien Tsin, China
Indian Head Mills of Ala., Cordova, Ala.
Lockwood Co., Waterville, Maine
Lonsdale Co., Lonsdale, R. I.
Lu Fung Cotton Mill, Tsinan Fu, China
Massachusetts Mills in Ga., Lindale, Ga.
Merrimack Mfg. Co., Huntsville, Ala.
Mollohon Manufacturing Co., Newberry, S. C.
Monadnock Mills, Claremont, N. H.
Monument Mills, Housatonic, Mass.
Nashua Manufacturing Co., Nashua, N. H.
National Spun Silk Co., New Bedford, Mass.
Naumkeag Steam Cotton Co., Salem, Mass.
Newberry Cotton Mills, Newberry, S. C.
Newmarket Mfg. Co., Newmarket, N. H.
New Bedford Cotton Mills Corp., New Bedford, Mass.
Nyanza Mills, Woonsocket, R. I.
Otis Company, Ware, Mass.
Pacific Mills, Lawrence, Mass.
Pacolet Manufacturing Co., Pacolet, S. C.
Palmer Mills, Three Rivers, Mass.
Pelzer Manufacturing Co., Greenville, S. C.
Pepperell Manufacturing Co., Biddeford, Maine
Queen City Cotton Co., Burlington, Vt.
Riverside & Dan River Cotton Mills, Danville, Va.
Scranton Lace Co., Scranton, Pa.
Skenandoa Cotton Co., Utica, N. Y.
Slatersville Finishing Co., Slatersville, R. I.
Soule Mills, New Bedford, Mass.
Tung Yeh, Shanghai, China
Utica Steam & Mohawk Valley Cotton Mills, Utica, N. Y.
Utica Knitting Co., Utica, N. Y. also Sherburne, N. Y.
Waltham Bleachery, Waltham, Mass.
West Point Mfg. Co., West Point, Ga.
Winnsboro Mills, Winnsboro, S. C.
Yu Yen Cotton Mill, Tien Tsin, China

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ENGINEERS

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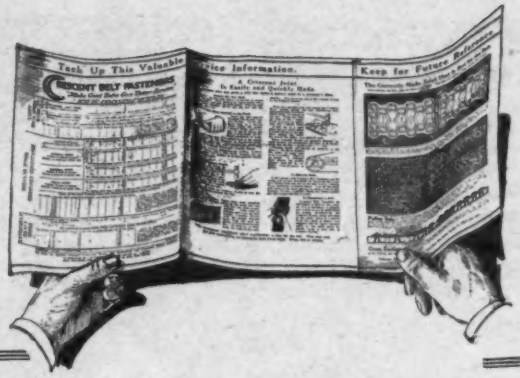


Here's the Latest Bulletin on Modern Scientific Methods in Belt Joining

As a practical man you know that no belt can give better service than its joint.

To enable you to get the *maximum* of service out of your belting, we have prepared this booklet—"Modern Scientific Methods of Belt Joining."

It actually *informs*—rather than argues.

Absolutely devoid of vague theorisms and selling buncomb, it goes right down to brass on the "how" and "why" of making belt joints with Crescent Belt Fasteners that will *hold* for the life of the most durable belt; joints that will not weaken the belt; belt joints that will run the same as endless on the pulley side, without noise, clatter or thumping; belt joints that will insure maximum power transmission and continuous production.

Every condition of belt service is completely and actually covered, and classified for *instant reference.*

"Modern Scientific Methods of Belt Joining" in your belt room will mean dollars in your pocket.

A copy is yours for the asking. Just tell us to send you Booklet M-1.

Crescent Belt Fasteners will be sent on 30 days' free trial. Advise us the width and thickness and pulley diameters on any drive you would like to try them. No charge or obligation involved, until after thirty days you are entirely satisfied.

Crescent Belt Fastener Company

381 Fourth Ave., New York City

Canadian Branch, 32 Front Street, West, Toronto.
England: 32, Paradise Street, Birmingham.

CRESCENT
Make Good Belts Give Better Service
BELT FASTENERS

THE JOHNSON FRICTION CLUTCH

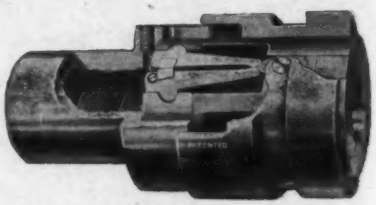
A Better Control for Textile Machinery

You will find the Johnson Clutch a most satisfactory means of driving textile machinery. More efficient and more convenient than the tight and loose pulley. Equally desirable on motor drives.

Made in both single and double types to fit standard pulley sizes. Clean, compact and durable. Grips smoothly and is easily adjusted to any tension.

Ask for the Johnson Clutch on your new machine equipment.

Ask for our Catalog "G"



Single Clutch Broken Away.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

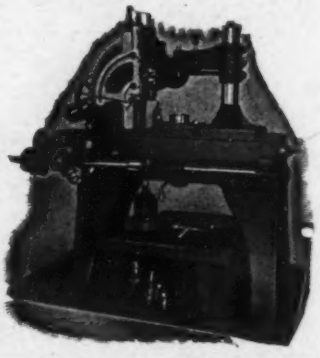
Full Automatic, Semi-Automatic and Hand Operated

Gear Cutting Machines

Especially adapted for use in Cotton Mills Hundreds now in use. Send for Special Circulars.

The D. E. Whiton Machine Co.,

NEW LONDON, CONN.



CRESSON-MORRIS CO.

POWER TRANSMITTING MACHINERY

Merit Plus Recognition

"The heights by great men reached and kept were not attained by sudden flight."

Time, skill and effort must also proceed merit as surely in machinery as in men.

Time, skill and effort must also proceed merit in order to obtain and maintain for merit the recognition it deserves.

The great number of large installations of Cresson-Morris Power Transmitting Machinery is proof of both the merit and the recognition of the merit that nearly three score years of skill and effort have endowed it with.

The cumulative knowledge of all this experience is always available to you in the recommendations of our engineers.

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ENGINEERS—FOUNDERS—MACHINISTS

PHILADELPHIA, PENNA.

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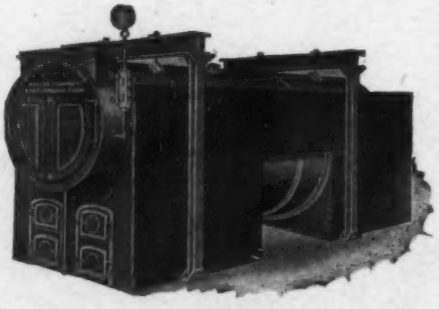
WALSH & WEIDNER BOILERS

Set in Our Improved Steel Casings

SAVE 10% TO 25%

Of Your Fuel Bill.



Send for Descriptive Bulletin.

BOILERS---TANKS

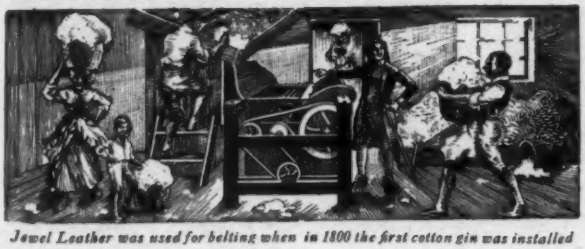
Structural Steel Work

Boiler Tubes, Castings, Etc.

The Walsh & Weidner Boiler Co.

CHATTANOOGA, TENN.

JEWELL LEATHER BELTING



Jewel Leather was used for belting when in 1800 the first cotton gin was installed

The corporate personality of the Jewell Belting Company was fixed by law in 1882—

but its real personality has been fixed through its ability to solve, during 150 years, the human equation between maker and user of good belting.

Hartford
Connecticut

Western Branch
2837 So. LaSalle St.,
Chicago, Ill.

The Permanent Solution of the High Cost of Lubrication: Use Economical

TRADE MARK REGISTERED IN
NON-FLUID OIL
UNITED STATES PATENT OFFICE

Special Textile Lubricants

With oil double the cost of a few years ago, further increases can be expected—say scientists, who tell us that the peak of oil production of this country has been reached.

But the cost of lubrication can be greatly reduced by using NON-FLUID Oil that clings to bearings and does away with the wasting common to oil. NON-FLUID Oil gives bearings better lubrication protection than the best fluid oils —at **much** less cost per month.

Use NON-FLUID Oil in all types of textile machines. You will not only save in the cost of lubrication, but in the spoilage of goods from oil stains. NON-FLUID OIL will not throw, drip or creep, but stays put in the bearing—and lasts longer than oil. This suggests another saving—and that is in the labor spent in oilings.

The coupon below is the sure way to better lubrication.

New York & New Jersey Lubricant Company
401 Broadway, New York

Southern Agent,
Lewis W. Thomason, Charlotte, N. C.

Ample Stocks always on hand at warehouses: Charlotte, N. C.; Atlanta, Ga., New Orleans, La.

Please send Testing Samples and Bulletin on Lubrication of Textile Machinery to

Name .....

Address .....

A New Catalog On Standardization of Engineering Specialties

This neat, compact and pocket-sized volume of the Sherwood Book shows the reasons for the wide-spread plan of standardization in selecting engineering specialties.

A glance through the Sherwood Book will reveal that standardization means a big saving in time and money—speeds up repairs—and makes the work easier.

Everything from fusible plugs to steam flue blowers and multiple oilers are shown in this handy volume. It shows plans of connections; discusses the proper handling of steam, water, and chemicals; and shows the various methods of lubricating with grease and oil.

Merely write your name and address on the margin of this page, forward it to us, and we will send the Sherwood Book to you by return mail.

Sherwood Manufacturing Company
Brass Founders and Finishers
Buffalo, N. Y.

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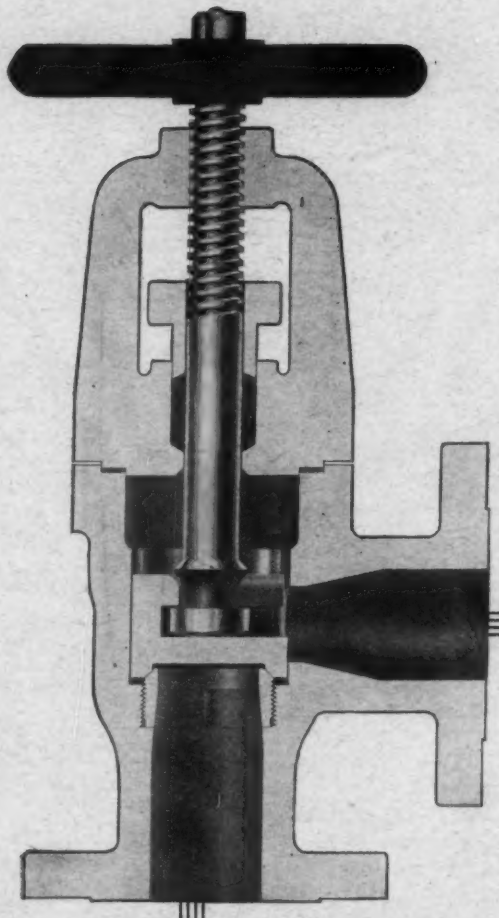
ENGINEERING-SPECIALTIES



No. 391 Flanged
No. 390 Screwed

CRANE

EXTRA HEAVY

Blow-off Valves

Comply with the A. S. M. E. Boiler Code

We recommend these valves for use as blow-offs on high pressure boilers and all other purposes where it is desirable to blow off dirty water, or water containing grit or sediment, under pressure.

This service, therefore, requires a valve which can be repaired quickly and cheaply. To prevent too frequent repairing we make these valves with a removable iron seat ring, having the seating surface on the outside of the ring. The disc also is made of iron.

This construction prevents scale from lodging between the seat and disc. The use of iron for this service in seat and disc is the result of many years experience with valves of this type.

1855 —— **CRANE CO.** —— 1920

836 South Michigan Avenue
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Branches in fifty-seven leading cities

We are manufacturers of 20,000 articles—valves, pipe fittings, steam specialties, etc.—for all phases of power plant equipment, and are distributors of pipe, heating and plumbing materials.

JENKINS STANDARD IRON BODY GATE VALVES

Figure 325

Double face solid wedge type. Design of body and bonnet insures perfect casting, free from internal shrinkage strains, and secures the maximum of strength and rigidity, enabling the valve to resist without distortion and leakage the severe stresses due to working pressure, expansion and contraction and the like. Has bronze seat rings firmly secured to the wedges —in smaller sizes wedges are made entirely of bronze.

16 in. and smaller for 125 pounds steam pressure; 18 in. and larger for 100 pounds; 16 in. and smaller for 175 pounds water pressure; 18 in. and larger for 125 pounds.

Genuine Jenkins Valves are marked with name and Jenkins Diamond—at supply houses.

REG. U.S. PAT. OFF. TRADE JENKINS MARK

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JENKINS BROS.

New York, Boston, Philadelphia,
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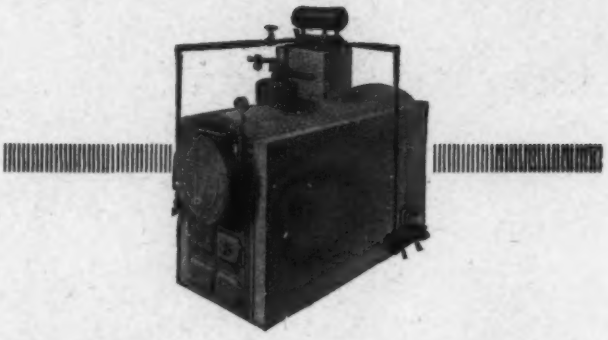
Jenkins Valves SINCE 1864



SAVE 20% ON COAL

Why use five tons or five cars of coal when with the Morehead Back-to-Boiler System draining your steam lines and steam heated equipment you can get the same results with four?

Scores of textile plants have not only effected big fuel savings, but have increased the efficiency of their steam heated equipment.

Here's a typical letter from a southern textile plant:

Morehead Mfg. Co.,
Detroit, Mich.

Gentlemen:

We have been using the Morehead Return Steam Traps in our boiler systems for the past year and a half, and are very much impressed with the fact that we are saving considerable fuel by doing so. The traps are working entirely satisfactory and the up-keep to the present time has amounted to virtually nothing. We cheerfully recommend the use of these traps to anyone who uses considerable steam.

Very truly yours,
VIRGINIA COTTON MILLS,
(Signed) A. L. Baker, Pres't.

We will gladly send you complete information regarding the Morehead Back-to-Boiler System—refer you to users in your vicinity. Write for catalog.

Morehead Manufacturing Co.

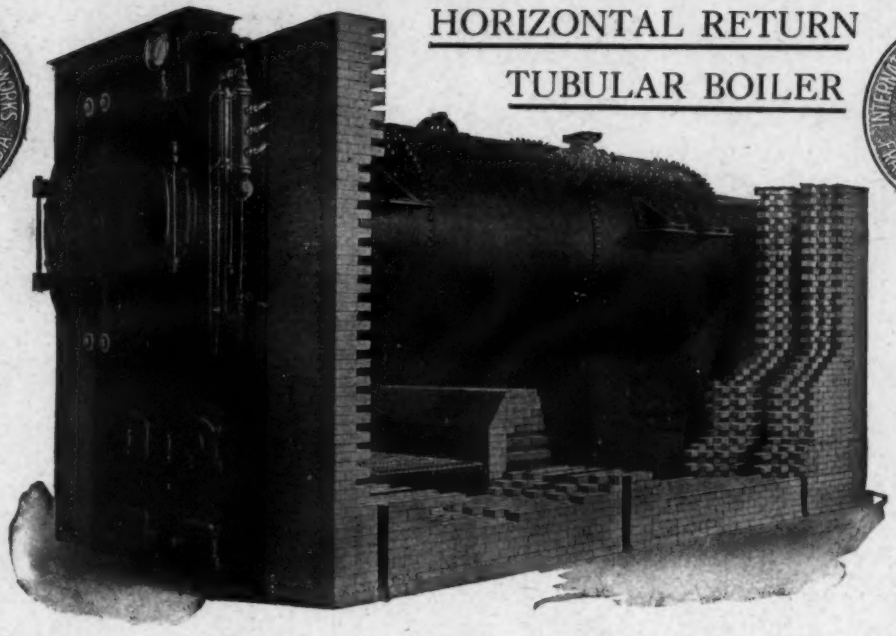
Detroit --- --- --- Michigan

Canadian Morehead Mfg. Co., Woodstock, Ont. for Dominion of Canada.

Morehead

"BACK-TO-BOILER-SYSTEM"

HORIZONTAL RETURN TUBULAR BOILER



The Most Economical Boiler of the Most Proferred Type.

The Horizontal Return Tubular Boiler has become the standard and most preferred type of boiler among the most experienced engineers because it has so fully adapted itself to the requirements of the ever-increasing demand for simplicity and efficiency.

The International Horizontal Return Tubular Boiler is the best of this type because it has proven itself economical in both operation and maintenance. In its design we have endeavored to eliminate every objectionable feature found in other makes of this type of boiler and the result is a PERFECT h.r.t. boiler. As to safety it meets every requirement of the strict Massachusetts Board of Boiler Rules and the ASME Code.

It sdesign is simplicity itself, its first cost is low, it requires less fuel, it has a great overload capacity, and although repairs are seldom necessary they can be made more easily and cheaply.

Every International Boiler is thoroughly tested under our rigid inspection before leaving our plant, and you are assured of a perfect boiler in every respect when you order from the International.

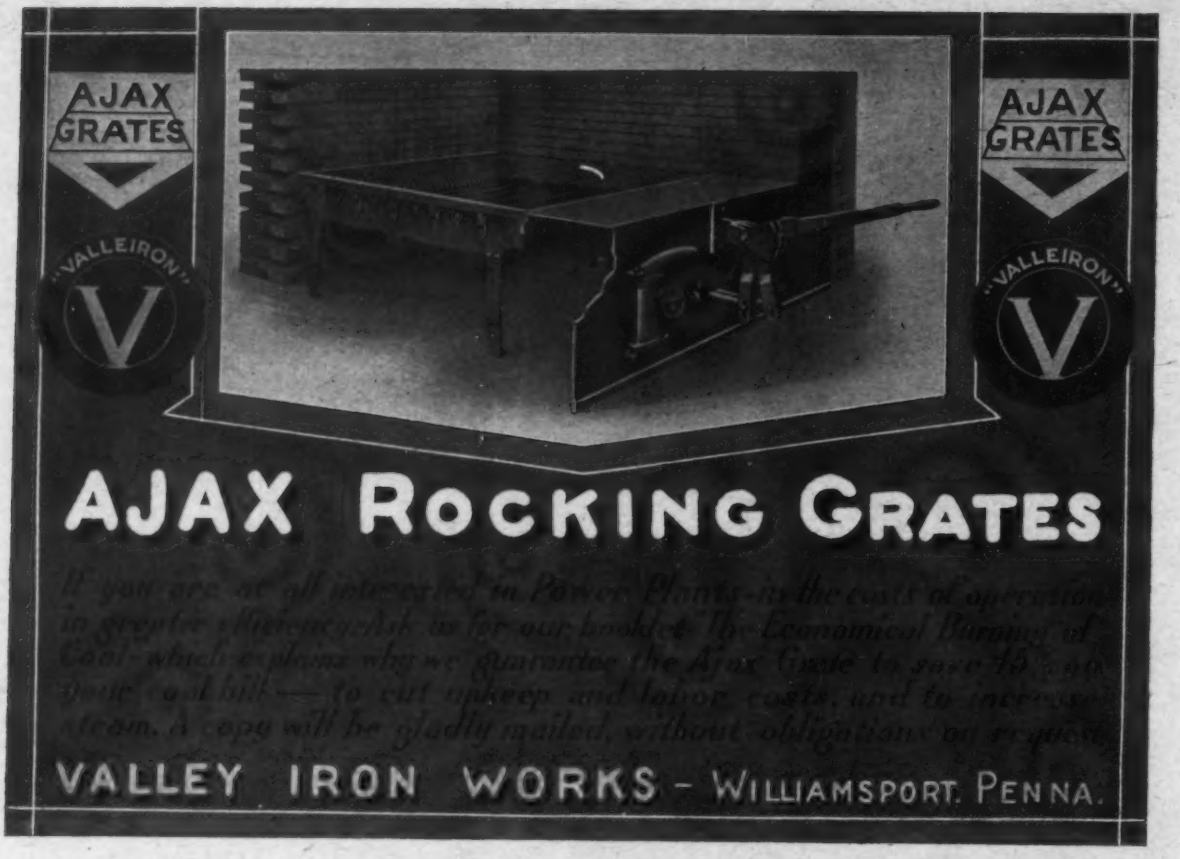
Write today for catalog.

INTERNATIONAL ENGINEERING WORKS, Inc.
FRAMINGHAM, MASS.

Southern Representative,
Isaac Hardeman, Charlotte, N. C.

BOSTON **NEW YORK**
PHILADELPHIA **SAN FRANCISCO**

Horizontal and Vertical, Water Tube, Return Tubular, Scotch and Manning Type Boilers, Shaking Grates, Etc.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AJAX ROCKING GRATES
If you are at all interested in Power Plants—in the costs of operation—in greater efficiency—Ask us for our booklet "The Economical Burning of Coal"—which explains why we guarantee the Ajax Grate to save 10% on your coal bill—to cut upkeep and labor costs, and to increase steam. A copy will be gladly mailed, without obligation, on request.
VALLEY IRON WORKS - WILLIAMSPORT, PENNA.

Machine Tools, General Mill and Machinery Supplies
THE WALRAVEN COMPANY
36-38 West Alabama Street Atlanta, Georgia.
SINCE 1855 Brown & Sharpe have built Gear Cutting Machines. You will find them giving satisfactory service everywhere.
Whether it is for spur or bevel gears, large gears or small gears, there is a time-tried B & S Gear Cutting Machine to fill your need.
Brown & Sharpe machines are built up from foundry to inspection room with accuracy—accuracy for long service—the keynote of every operation.
Exclusive Southern Representatives for
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Milling Machines, Gear Cutting Machines, Grinders, Screw Machines, Etc.
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Lathes, Shapers, Centering Machines
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Boring and Turning Mills, Vertical Turret Lathes
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Let us quote you on your requirements.
Our service is unexcelled.

Lane's UNIQUE Ratchet Tools

STANDARD SET
Consists of Ten Pieces

1—7-inch Ratchet Wrench (Drop-Forged)
2—Screw Driver Bits
7—Sockets—turned from solid round bar (Machinery Steel)—broached hexagon openings—fitting U. S. Standard Cap Screws 5-16 inch to 5-8 inch (except 9-16 inch) and Hexagon Nuts—1-4 inch to 1-2 inch (except 7-16 inch). S.A.E. Cap Screws and Hexagon Nuts 5-16 inch to 9-16 inch

Size of Socket Openings

1-2 inch fits { 1-4 inch Hexagon Nut / 5-16 inch Cap Screw
9-16 inch fits 3-8 inch Cap Screw
39-64 inch fits 5-16 inch Hexagon Nut
5-8 inch fits 7-16 inch Cap Screw
11-16 inch fits 3-8 inch Hexagon Nut
3-4 inch fits 1-2 inch Cap Screw
7-8 inch fits { 1-2 inch Hexagon Nut / 9-16 inch Cap Screw S.A.E. / 5-8 inch Cap Screw U. S.

Packed in strong Black Fibreroid Case
Weight 22 ounces

LIST PRICE, $4.00

WILL B. LANE UNIQUE TOOL CO.,
180 N. Dearborn St., Chicago, Ill.

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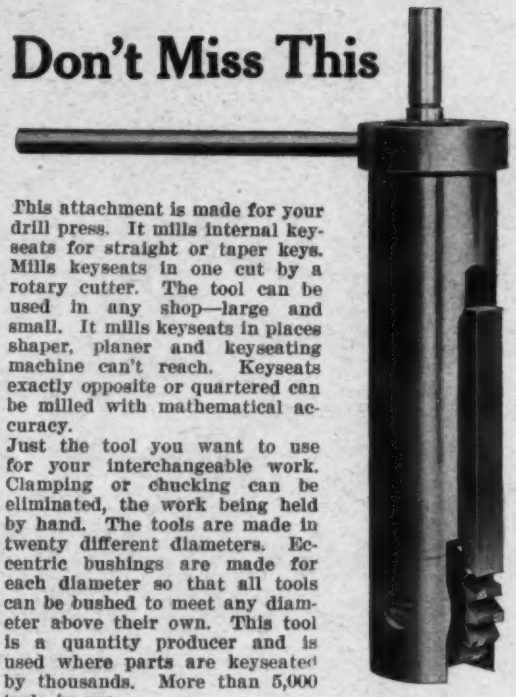

This attachment is made for your drill press. It mills internal keyseats for straight or taper keys. Mills keyseats in one cut by a rotary cutter. The tool can be used in any shop—large and small. It mills keyseats in places shaper, planer and keyseating machine can't reach. Keyseats exactly opposite or quartered can be milled with mathematical accuracy.

Just the tool you want to use for your interchangeable work. Clamping or chucking can be eliminated, the work being held by hand. The tools are made in twenty different diameters. Eccentric bushings are made for each diameter so that all tools can be bushed to meet any diameter above their own. This tool is a quantity producer and is used where parts are keyseated by thousands. More than 5,000 tools in use.

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National Machine Tool Co.
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Southern Representatives:
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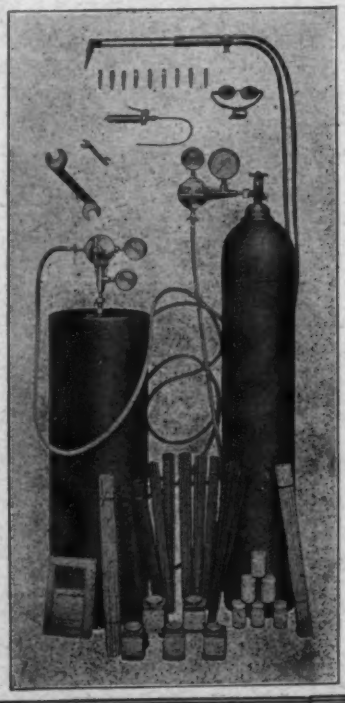
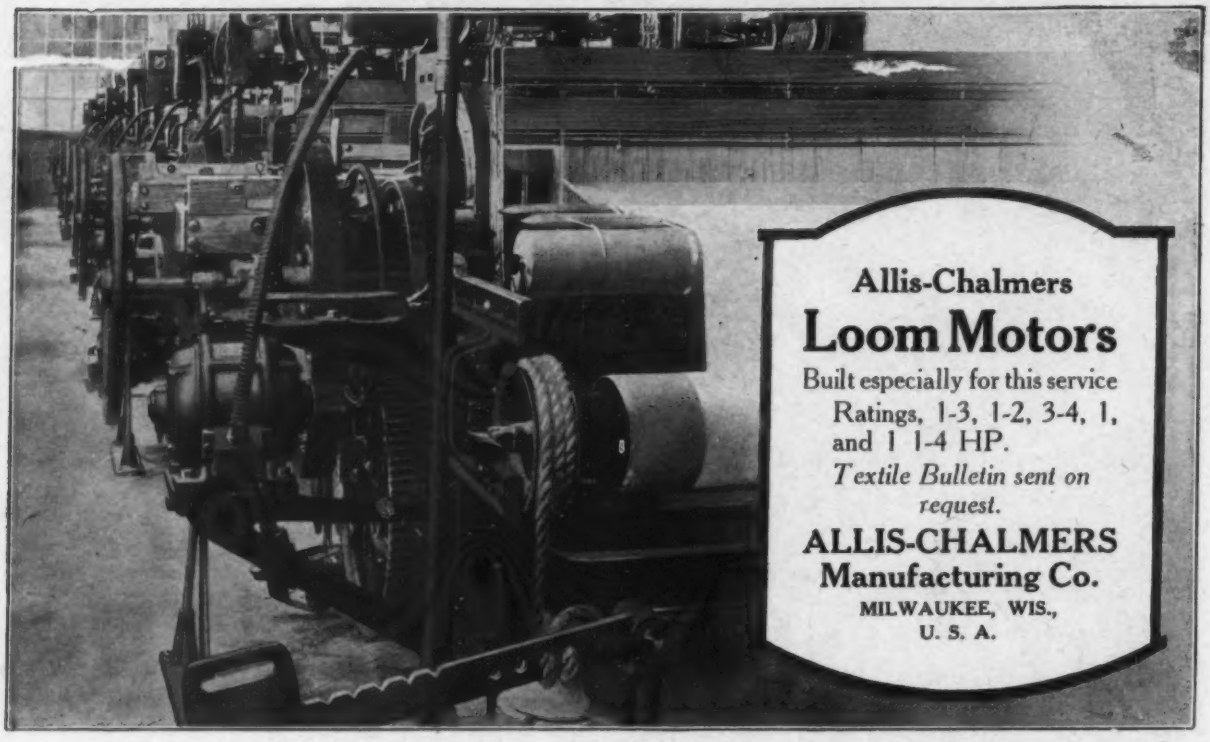
WATERHOUSE



NO TEXTILE MILL can afford to be without a WATERHOUSE Welding Equipment. It often pays for itself on a single job. Having a WATERHOUSE Welder is like having a complete stock of new parts, for any broken part may be made good as new in a short time. No delay while new parts are coming from the factory; no money tied up in spare parts. It is making and saving in many mills; put it to making and saving for you.

Complete catalogue on request.

Waterhouse Welding Company
Boston, Mass.



Allis-Chalmers
Loom Motors
Built especially for this service
Ratings, 1-3, 1-2, 3-4, 1, and 1 1-4 HP.
Textile Bulletin sent on request.
ALLIS-CHALMERS Manufacturing Co.
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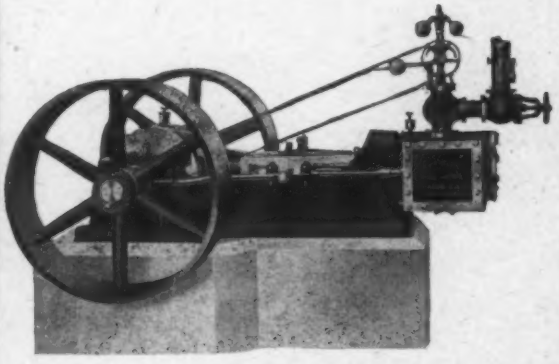


J. S. Schofield's Sons Co.
Macon, Georgia
MANUFACTURERS OF
High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.
Heavy Castings and Wrought Iron Works.

Brazing—Oxy-Acetylene and Thermit
WELDING

Over ten years of practical experience in brazing and welding all kinds of machinery and equipment enables us to offer efficient service to the cotton and knitting mills.

Parts shipped to us welded and returned promptly.

Or wire us, and one of our first-class machinists and practical welders will come to your plant and weld your job for you.

Boiler Welding A Specialty

CHATTANOOGA BRAZING & WELDING CO.
1309 Chestnut St., Chattanooga, Tenn.

Atlas

4-in-1 Multiple Fuse

A fuse that is not merely sold to you, but maintained in service thereafter at the lowest cost of any fuse on the market.

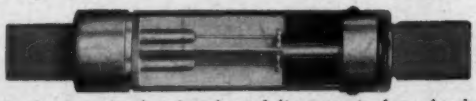
Pull down the ferrule and give it a quarter of a turn, bringing a new fuse element into circuit.

Foolproof—can be renewed only with self-contained elements, and it is impossible to insert any metallic substance that will render the fuse ineffective.

Guaranteed—to operate in accordance with specifications for enclosed fuses as promulgated by Underwriters' and Factory Mutual Laboratories.

The approval labels that insure perfect performance

FM and UND. LAB. INSPECTED.



600-volt size, showing interior and its separate fuse chambers with patented silencer device.

MULTIPLE ELECTRIC PRODUCTS CO., Inc.

458 Fourth Ave., New York, N. Y. Canadian Branch: Toronto, Ontario

Our new Oxygen Plant at Atlanta.

PROMPT DELIVERY 99.5 Pure Oxygen

WE have cut the cost of welding to our customers to the minimum by installing oxygen supply stations at convenient points over the South. These stations can ship oxygen to you on short notice and being located near you the freight cost is negligible.

We have just completed a new oxygen plant at Atlanta which is now manufacturing the purest oxygen. Regardless of the quantity of oxygen gas your welding jobs consume, if this gas isn't as pure as STANDARD, you are losing money. When you use STANDARD OXYGEN you are reducing your welding costs to the minimum, for STANDARD Oxygen is 99½% pure—the best that can be bought.

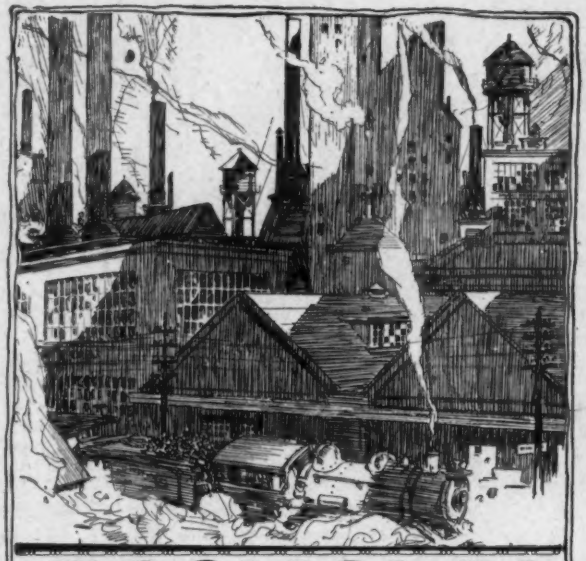
STANDARD is the first company in the South to manufacture oxygen, and satisfaction is insured by prompt shipments, full measure and absolute purity of oxygen. This satisfaction is attested to by the fact that our business has increased over 800% in the last two years.

There's a Service Station located near you. Write the one nearest you.

STANDARD GAS PRODUCTS CO., INC.
ATLANTA, SAVANNAH, CHATTANOOGA, GRETNA, LA.

STANDARD

WELDING APPARATUS AND SUPPLIES



ECONOMY *renewable* FUSES

Knife-blade type Economy Fuse

Industries persisting in the use of "one-time" fuses pay more for electrical protection than those equipped with Economy Fuses.

The famous Economy "Drop Out" Renewal Link makes possible an annual saving of 80% in fuse maintenance costs.

Nothing is destroyed when an Economy Fuse blows but the inexpensive strip of fusible metal.

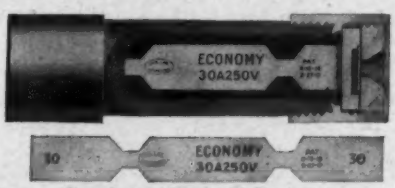
This is quickly and easily replaced with a new "Drop Out" Renewal Link without delay to men or machinery. The heavy cartridge, end caps and the winged washers which lock the fuse are virtually indestructible and are used again and again.

Check up fuse costs in your plant. And remember that Economy Fuses give maximum protection at minimum cost.

For sale by all leading electrical jobbers and dealers.

Economy Fuse & Mfg. Co., Chicago, U. S. A.

Economy Fuses are also made in Canada at Montreal



Ferrule type Fuses with Economy "Drop Out" Renewal Link

Economy Fuses were the first line using inexpensive bare links for restoring blown fuses to their original efficiency to be APPROVED IN ALL CAPACITIES by the Underwriter's Laboratories.

Speed in Service is Only Rivaled by Accuracy
Each Would Be Useless Without the Other

Unfailing Service

In the struggle and stress of modern business life every moment of delay represents a loss of time and money which cannot be regained.

When promptness, accuracy and dispatch are the vital elements in the delivery of electric equipment or supplies it is natural to turn to the Carter Electric Company for service.

This is an organization whose members are trained to meet the demands of any emergency and this organization is ready to serve you on an instant's notice.

If your requirements cover Rubber Conduit Wire, Switches, Safety Switches, Wiring Devices, Fuses, Lamps or other electric supplies, it is only a matter of a few hours before we can place them in your hands.

This is because our warehouses are always fully stocked—everything you may need and in large quantities—and with every modern facility for handling your business the Carter Electric Company pledges you **Unfailing Service.**

Carter Electric Company

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Electric Light, Power, Telephone and Bell Wiring for Residences, Stores and Factories. Estimates Furnished.

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All kinds of new and used Electrical Machinery bought, sold and exchanged.

All Kinds of Electrical Work

MOTORS RENTED TELEPHONE YOUR WANTS
LOCAL AND LONG DISTANCE, Ivy 1788-1790.

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Modern business demands it. Time is the most valuable asset of the executive.

STROMBERG-CARLSON
INTER-COMMUNICATING SYSTEMS

add hours to the business day—eliminate loss of precious minutes—save endless unnecessary footsteps.

They are easily installed—require no switchboard or operator. Their operation is simplicity itself.

Push *ONE* Button *ONCE*—and Talk.

Dixie Electric Equipment Co.

INDUSTRIAL ELECTRICAL EQUIPMENT
Interior Telephones—Fire Alarm Apparatus.
Watchman's Clock Detectors.
Electric Clocks—Riot Alarms—Code Calling Systems.
A Southern Concern—Giving Service to the South.
Data and Complete Information on Request.

37 Peters St. Bell Phone Main 826.
ATLANTA, GA.

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International Cotton Products Company

Branches: Philadelphia, Pa. Charlotte, N. C.
15th floor Hurt Bldg., ATLANTA, GA.
Warehouses: Roseland, Ga.

COTTON COTTON WASTE LINTERS

E. A. CUTTS C. S. CUTTS, SR.

E. A. CUTTS COMPANY

Cable Address: "CUTTS"
COTTON BROKERS
30 Bay Street, East
Savannah, Ga.
Office Phones—478—2713—Postal Phone
Long Distance—9929
Branch Office: E. A. CUTTS & SON, Augusta, Ga.

SUPPLIES, MISC.

STENCILS — METAL CHECKS — RUBBER STAMPS

Send for Catalogue

Stencil Work for Cotton Mills Our Specialty

SOUTHERN STAMP & STENCIL CO.

7 W. Mitchell St. ATLANTA GA.

WELDING & REPAIRS

SOUTHERN WELDING & MACHINE CO.

190 COURTLAND STREET ATLANTA, GA.
Gear Cutting and Machine Work.
No job too large or too small for us.
We specialize in cotton mill and oil mill welding and machine work.
Oxy-Acetylene and Electric Welding

Advertising conserves the Manufacturer's time by acquainting him with a service or product at his leisure long before the need for such arises.

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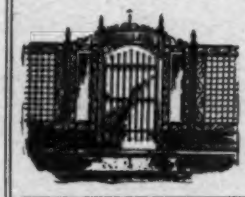
Cast Iron Columns

FOR

COTTON MILL CONSTRUCTION

American Cast Iron Pipe Company

COLUMN DEPARTMENT BIRMINGHAM, ALA.
NEW YORK OFFICE: 261 BROADWAY



WIRE RAILINGS
WINDOW GUARDS
WIRE CLOTH
Established 1835.
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POWER & HAND PUMPS DAIRY SUPPLIES
PROMPT SERVICE.

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P. O. Box 87 Phone: Long Distance 2985
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GENERAL CONTRACTOR
Charlotte, N. C.

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CANDLER BLDG., - ATLANTA, GA.
All classes of buildings constructed promptly and efficiently and at reasonable prices.

Established 1885

WELLS

HUGHES SPECIALTY WELL DRILLING CO.
CHARLESTON ATLANTA

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H. Ray Paige, Pres. J. A. Mandeville, Vice-Pres. J. H. Schoolfield, Secy. and Treas.

Southern Cotton Yarn Co., Inc.

1 Madison Avenue, New York City

SELLING AGENTS FOR

SOUTHERN MILLS

Carded—Combed Yarns

4's TO 120's SINGLE AND PLY

Selling Direct to Consumer.
NEW ACCOUNTS SOLICITED.

The Recognized Standards of Quality

COTTON YARNS

Our Fine Yarns Make Fine Fabrics

The manufacturers of a number of America's well known textile products can vouch for the strength, uniformity, cleanliness, and better weaving and knitting qualities of our yarns.

The yarns we spin for knitting, weaving, laces and converting, are furnished in all twists on skeins, cones, tubes and warps:

36s to 80s Single and Ply Combed Peeler Right Twist. 36s to 50s Single and Ply Double Carded Peeler, Right or Reverse Twist.

20s to 60s, 2, 3, and 4 Ply, Combed Peeler, Reverse Twist.

Our products are sold direct and exclusively through our General Sales Offices:
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H. A. FLORSHEIM, Sales Manager
Long Distance Phone: Gramercy 812
New England Representative
H. D. Skinner,
212 Summer St. Boston, Mass.

Gray Manufacturing Co.
Arrow Mills, Inc.
Parkdale Mills, Inc.
Flint Manufacturing Co.
Arkray Mills, Inc.
Arlington Cotton Mills
Myrtle Mills, Inc.

Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF

Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

Hunter Manufacturing & Comm. Co.

58-60 Worth St.

NEW YORK CITY U. S. A.

WORLD-WIDE DISTRIBUTOR OF COTTON FABRICS

COTTON FABRICS FOR HOME AND EXPORT

DOMESTIC BRANCH OFFICES

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Philadelphia St. Louis
Baltimore Greensboro

FOREIGN BRANCH OFFICES

Buenos Aires, Argentine Curacao, D. W. I. Caracas, Venezuela
Santiago, Chile
San Juan, Porto Rico Havana, Cuba Barranquilla, Columbia

A PRACTICAL SOLUTION OF YOUR LABOR DIFFICULTIES

STRIKE

USE AND OCCUPANCY INSURANCE
FOR MANUFACTURERS

Employers Mutual Insurance & Service Co.

Home Office—Maryland Trust Building, Baltimore, Md.

Consult any broker, or
Write for booklet "A New Asset for Industry"

The strike menace has become a factor of increasing uncertainty in the calculations of employers of labor. The hazard of loss of Fixed Charges and Net Profits by strikes is now estimated at more than 15 times the hazard of Fire. This Mutual Organization of Employers, operating 35 industries throughout 20 States, not only protects members against loss of Fixed Charges and Net Profits by Strikes, but is the medium through which manufacturers have organized for the purpose of dealing with labor affairs exclusively to the great benefit of industry by the practical application of thoroughly proven principles.

ESTABLISHED 1872

H. & B. BEER
NEW ORLEANS

HENRY BEER — EDGAR H. BRIGHT
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MEMBERS OF

New Orleans Cotton Exchange
New Orleans Future Brokers Association
New York Stock Exchange
New York Cotton Exchange
New York Coffee Exchange
New York Produce Exchange
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Associate Members of the Liverpool Cotton Association

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HUGHES FAWCETT

IMPORTER AND COMMISSION MERCHANT

LINEN YARNS
For Weaving, Knitting and all Purposes

TURKEY RED YARNS
For Towel Borders, Towellings and Bleaching Cloth

Linen Jacquard Harness Twine
And Every Description of Linen Thread and Twine

115 Franklin Street, : NEW YORK

WOODWARD, BALDWIN & CO.

DRY GOODS

Commission Merchants

43-45 WORTH STREET, NEW YORK

1865 The Oldest National Bank in the Cotton-Growing States 1920

The Atlanta National Bank

—and the—

Highways of the South

In the Heart of Atlanta—
The Heart of the South.

The latest report of the Federal Highway Council shows the available road construction fund in the United States to be $654,065,000. Of this amount, there is available for use in the South $217,749,000, or 33.2 per cent of the entire amount.

The average fund for each of the southern states is $14,516,000, as against an average of $13,220,000 for the other thirty-three states.

To this enormous sum of more than a quarter billion dollars from the federal government will be added many millions of state money during the present year, as practically each southern state is constructing many miles of the highest type of roads.

A DECIDED INCREASE IN THE VALUE OF FARM LANDS INVARIABLY FOLLOWS EXTENSIVE ROAD IMPROVEMENT, AND EQUAL IMPROVEMENT IN GENERAL BUSINESS CONDITIONS ALWAYS FOLLOWS ANY INCREASE IN THE VALUE OF FARM LANDS OR FARM PRODUCTS.

Wherever there is a clear-headed, far-seeing, courageous management in the South there is going to be continued prosperity. As markets become stabilized, there will possibly be some need for adjustment. If the Atlanta National Bank's experience, gained through more than a half-century's dealings with problems of southern business men, can be of assistance in this connection, it will be given—cheerfully and fully.

The Atlanta National Bank

IF YOU NEED BANKING SERVICE

in the South,
and especially in Georgia

You need The Citizens & Southern

Capital and Surplus $4,500,000

The Citizens & Southern system has completely equipped offices in Atlanta, Savannah, Macon and Augusta.

Each of these offices is connected with the others by direct private wires.

If you are a customer of either office, and want information or service of any kind from the other cities these wires and the complete organization are at your service.

Hundreds of direct correspondents all over the south makes it possible to give you practically the same service wherever you want it.

The Citizens & Southern Bank

Atlanta—Marietta at Broad

Savannah Macon Augusta

"No account too large, none too small"

Credit is Progressive
Local success—a local reputation—creates local credit. As a business expands, extending its acquaintance, broadening its market, it gradually develops a national character and is entitled to a national credit.
The customers of the National Bank of Commerce in New York are those concerns which have built up national and international relations, requiring credit resources proportionate to their operations.
National Bank of Commerce in New York
Capital, Surplus and Undivided Profits Fifty-five Million Dollars
NATIONAL BANK OF COMMERCE IN NEW YORK
1839

Factors

TEXTILE BANKING COMPANY
INCORPORATED
50 Union Square New York
Inaugurated by GUARANTY TRUST COMPANY OF NEW YORK *and* LIBERTY NATIONAL BANK OF NEW YORK

Classified Opportunities.

Miscellaneous

WANTED

One of the oldest and best known Agents in this country is open to take on the accounts of Cotton Mills who make bleached absorbent gauze, same for Hospital, Surgical and Drug trade. Have outlet for not less than ten million yards yearly. Commission basis. Address Box 27, Care COTTON, Atlanta, Ga.

S. S. STORER, M.E., C.E.
Complete plans for
Textile Mills, Commercial Buildings, Bridges.
Personal Attention. Fees Reasonable.
Atlanta, Ga.

The UNIVERSAL CASH BOOK is not only the most modern, original and simple Cash Book yet devised—but the finest money can buy. Write for circular No. 42.
UNIVERSAL SYSTEM, INCORPORATED,
608 So. Dearborn St.
CHICAGO

WANTED—Position as Superintendent by widely experienced man who has been Overseer and Superintendent for past 15 years, in Northern Mills. Well educated Englishman, American naturalized, 37 years of age, family, etc., and thoroughly trained. Familiar with welfare work, etc. Best references. Address Box 21, care COTTON, Atlanta, Ga.

Wanted—Salesmen.

Salesmen calling on the textile mills, and interested in new lines of machinery, paints, building supplies or chemicals, either as a side line or exclusively will find it profitable to write, giving experience, territory covered and other details. Correspondence strictly confidential. Cotton, 1021 Grant Building, Atlanta, Ga.

RATES:

WITHOUT DISPLAY.

"Positions Wanted" 3 cents per word per insertion. Minimum charge 50 cents. Payable in advance.

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address.)

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2.00 per inch per insertion.

Rates for larger spaces furnished on application.

TIRE FABRIC FOR SALE:

40,000 to 80,000 pounds standard construction, 17¼ oz. 60" width Carded Peeler building fabric, for immediate delivery. Submit offers to Box 32, care COTTON, Atlanta, Ga.

TIRE FABRIC YARN FOR SALE:

187,500 pounds Combed Sakellarides yarn, 23/1, 20/1 or 24/1, on tubes, or on beams with number of ends and leasing as desired, for delivery October to March inclusive. Submit offers to Box 34, care COTTON, Atlanta, Ga.

TIRE FABRIC YARN FOR SALE

270,000 pounds Combed Peeler yarn, 23/1, 20/1 or 24/1, on tubes, or on beams with number of ends and leasing as desired, for delivery October, November and December, 1920. Submit offers to Box 31, care COTTON, Atlanta, Ga.

For Sale

New and Second Hand
ENGINES
Corliss Automatic and Slide Valve
BOILERS
Pumps, Hoisting Engines, Gas and Gasoline Engines.
MACHINE TOOLS
Lathes, Planers, Shapers, Drill Presses, etc.
WOOD WORKING
Planers, Molders, Band Saws, etc.
ELEC. MACHINERY
Dynamos and Motors
AND SUPPLIES OF ALL KINDS
FRANK TOOMEY, Inc.,
127-31 N. Third St.
Philadelphia, - Pennsylvania

CORD TIRE FABRIC FOR SALE.

About 41,500 pounds 60" width Combed Sakellarides Cord Fabric, with 6 picks per inch, for immediate delivery. Submit orders to Box 30, care COTTON, Atlanta, Ga.

TIRE FABRIC YARN FOR SALE:

160,000 pounds Carded Peeler yarn beams with number of ends and leasing as desired, for delivery October, November, December and January. Submit offers to Box 33, care COTTON, Atlanta, Ga.

Have You

Have you any proposition to put before the executives in the textile mills of the South? Anything to sell or buy that they may want or have? Do you want a better position or do you want a good man to fill a position?

Whatever your message, this "Classified Opportunities" section of COTTON is the logical place for the announcement of your requirements.

It's the meeting place for Employer and Employee, and a good salesman in print for anything you want to dispose of.

A little ad won't cost much. Try it for a month or so.

Buyers' Index

Acetylene Welding Apparatus.
(See Welding Apparatus.)

Acetylene Gas.
Commercial Acetylene Supply Co.
Linde Air Products Co.
Oxweld Acetylene Co.
Prest-O-Lite Co.
Southern Welding & Mch. Co.
Standard Gas Products Co.
Waterhouse Welding Co.

Accountants.
(See Auditors and Accountants.)

Air Brakes.
Allis-Chalmers Mfg. Co.

Air Washers
American Blower Co.
Carrier Eng. Corp.
New York Blower Co.
Parks-Cramer Co.
Sturtevant Co., B. F.

Air Conditioning Systems.
(See Humidifying Apparatus.)

Albone.
Roessler & Hasslacher Chemical Co.

Alkalies.
(See Dyestuffs and Chemicals.)

Aniline Colors.
(See Dyestuffs and Chemicals.)

Anti-Chlorine.
(See Dyestuffs and Chemicals.)

Aprons-Rub.
Ladew & Co., Inc., Edw. R.
Smith & Furbush Machine Co.
Graton & Knight Mfg. Co.

Architects and Engineers.
American City Eng'g Co.
Dowman, George.
Draper, E. S.
Ferguson Co., John W.
Industrial Welfare Builders.
Lockwood, Greene & Co.
Robert & Co.
Spiker & Lose.
Sirrine, J. E.
Thompson & Binger, Inc.

Ash Handling Machinery.
(See Coal Handling Machinery.)

Asphalt Slate Shingles.
(See Slate Asphalt Roofing.)

Auditors and Accountants.
American Audit Co.
Ernst & Ernst.

Auto Trucks.
(See Trucks—Auto.)

Automatic Controllers (Temperature.)
See Temperature Controllers.

Automatic Loom Attachments.
(See Loom Attachments.)

Automatic Feeds for Cotton.
Proctor & Schwartz, Inc.
Saco Lowell Shops.
Sargent's Sons Corp., C. G.
Smith & Furbush Mch. Co.
Whitin Mch. Works.

Backwashers.
Sargent's Sons Corp., C. G.

Automatic Scales.
(See Scales).

Ball Bearings.
Aldrich Mch. Works.
Campbell Mfg. Co.
Hyatt Roller Bearing Co.
S K F Industries.
U. S. Ball Bearing Co.

Ball Bearing Housings.
Aldrich Mch. Works.

Ball Bearing Top Rolls.
Campbell Mfg. Co.

Bale Band Buckles.
(See Box Strapping & Buckles.)

Bale and Box Ties.
Acme Steel Goods Co.
Lovingood Co.
Regnas & Co., J. R.
Signode System, Inc.

Baling Machines.
Crompton & Knowles Loom Wks.
Draper Corporation.
Economy Baler Co
Galland-Henning Mfg. Co.
Williams & Sons, I. B.
Hulme, J. S.
Saco-Lowell Shops.

Baling Presses.
(See Presses.)

Bandages, Tapes, Etc.
American Textile Banding Co.

Bands.
(See Tapes).

Banding Straps and Buckles.
Acme Steel Goods Co.
Lovingood Co.
Regnas & Co., J. R.
Signode System, Inc.

Bands (Self-Tying).
Campbell Mfg. Co.

Banks.
Atlanta National Bank.
Citizen & Southern Bank.
Irving National Bank.
National Bank of Commerce in New York.
National Shawmut Bank.
Textile Banking Co., Inc.

Bars (Corrugated for Concrete Reinforcement).
Corrugated Bar Co.

Barometers (Mercurial).
Taylor Instrument Co.

Barrels—Fibre.
(See Fibre Products.)

Baskets—Mill.
(See Boxes—Mill.)

Batteries (Elec.)
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Beam Dyeing Machines.
Cocker Mchry. & Foundry Co.

Beam Heads (Steel).
Mossberg Co., Frank

Beaming and Warping Mchry.
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Bearings.
Chicago Pulley & Shafting Co.
Cresson-Morris Co.
Diamond State Fibre Co.
Hyatt Roller Bearing Co
Standard Pressed Steel Co.
S K F Industries.
U. S. Ball Bearing Co.
Valley Iron Works.

Belting.
American Supply Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Russell Mfg. Co.
U. S. Rubber Co.
Walraven Co.
Williams & Co., I. B.

Belting—Chain, Link.
Link-Belt Company.
Morse Chain Co.

Belting—Rope.
(See Rope Transmission)

Belt Conveyors.
Link-Belt Company.
Morse Chain Co.
Portable Machinery Co.

Belt Dressing.
Jos. Dixon Crucible Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Walraven Co.
Williams & Co., I. B.

Belt Fasteners.
Crescent Belt Fastener Co.
Flexible Steel Lacing Co.

Belt Hooks.
Crescent Belt Fastener Co.

Belt Lacing.
Crescent Belt Fastener Co.
Flexible Steel Lacing Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Walraven Co.

Belt Rivets.
Crescent Belt Fastener Co.

Belt Tighteners.
Link-Belt Company.
Williams & Sons, I. B.

Benches (Park & Playground).
(See Playground Equipment).

Billiard Tables & Etc.
Brunswick-Balke-Collender Co.

Bleacheries.
(See Dyers, Bleachers and Finishers.)

Bleaching Kiers.
Butterworth & Sons Co., H. W.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Textile Finishing Machinery Co., The

Bleaching Machinery.
(See Dyeing, Bleaching & Finishing Machinery).

Bleaching, Finishing and Sizing Materials.
(See Finishing Materials.)

Blowers and Blower Systems.
American Blower Co.
Carlisle & Gale Co.
Carrier Eng. Corp.
General Electric Co
New York Blower Co.
Perkins & Son, B. F.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.

Boards—Fibre.
Diamond State Fibre Co

Boards—Form.
Pearson, Jos. T

Bobbins.
Draper Corporation.
Greenville Spool & Mfg Co.
Jordan Mfg. Co.
Shambow Shuttle Co.
Whitin Machine Works.

Bobbin Heads.
Diamond State Fibre Co.

Boilers.
International Engineering Wks., Inc.
Jones Mchry. Corp.
Lombard Iron Works & Supply Co.
Schofield's Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.

Boiler Feed Water Purification.
American Water Softener Co.
Borromite Co. of America.
Hulme, J. S.
Permutit Co.
Refinite Co
Scaife & Sons, Wm. B.

Boiler Room Fittings & Supplies.
Crane Co.
International Engineering Co.
Jenkins Bros.
Lunkenheimer Co.

Boiler Grates and Stokers.
(See Grates and Stokers).

Boiler Graphite.
Jos. Dixon Crucible Co

Box Strapping and Tie Buckles
(See Banding Straps & Buckles).

Boxes—Mill.
Diamond State Fibre Co
Hightower Box & Tank Co.
Keystone Fibre Co.
Lane & Bros., W. T.
Rogers Fibre Co.
Standard Fibre Co.

Boxes (Packing).
(See Packing Boxes).

Bowling Alleys, Etc.
Brunswick-Balke-Collender Co.

Braids.
(See Tapes.)

Brake Linings.
Diamond State Fibre Co.

Brazing.
(See Welding).

Brokers (Cotton).
(See Cotton Dealers & Brokers).

Brokers (Stock).
(See Stocks and Bonds).

Brushes—Mill.
Atlanta Brush Co.

Brushes—Commutator.
Dixon Crucible Co., Jos.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Buckets & Pails—Mill.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.

Buckets—Elevator and Grab.
Link-Belt Company.

Buckles—Cotton Tie.
(See Box Strapping and Ties).

Building Contractors.
(See Contractors.)

Buildings—Portable.
Dowman, George.
Industrial Welfare Builders
Lockwood, Greene & Co.

Building Material.
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Barrett Co., The
Birmingham Slag Co.
Corrugated Bar Co.
Detroit Steel Products Co.
Dixie Portland Cement Co.
Dowman, George.
Dufur & Co
High-Grade Mfg. Co.
Industrial Welfare Builders
Kirkpatrick Lumber & Timber Co.
Lockwood, Greene & Co.
Nashville Hardwood Flooring Co.
Southern Cypress Mfg. Asso.

Bungalows.
(See Houses—Ready Built).

Burr Pickers.
Sargent's Sons, C. G.
Smith & Furbush Machine Co.

Bushings.
Diamond State Fibre Co.
Southern Spindle & Flyer Co.

Cabinets.
(See Lockers).

Calenders.
Butterworth & Sons Co., H. W.
Textile Finishing Mchy. Co.

Calender Rolls.
Campbell Mfg. Co.
Butterworth & Sons Co., H. W.
Roy & Son, B. S.
Perkins & Son, Inc., B. F.
Textile Finishing Machinery Co.

Calling System (Inter Telephone).
Carter Elec. Co.

Cans—Roving.
Diamond State Fibre Co.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.

Cars and Trucks—Fibre.
(See Trucks.)

Car Unloaders.
Portable Machinery Co

Carbonizing Machines.
Philadelphia Drying Mchry. Co
Proctor & Schwartz, Inc.
Sargents Sons & Co., C. G.
Textile Finishing Machinery Co., The

Carding Machinery.
Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Card Clothing.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co
Whitin Machine Works.

Card Feeds.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
Whitin Machine Co.

Card Grinding Machinery.
Roy & Son Co., B. S.
Smith & Furbush Mch. Co.
Whitin Machine Works.

PIEDMONT PERFECT DIXIE DRIVE

SPINNING MACHINE BANDS

The Piedmont Dixie Perfect Drive spinning bands have been thoroughly tried out in several mills for the last two to three years.

Mills now using these bands report saving of 33 1-3 per cent. in expense "to say nothing about the saving in waste from soft bobbins." They also report them "easier and quicker to put on than the old type band."

We offer to the trade a money saving device.

IT IS NO EXPERIMENT LET US TELL YOU MORE

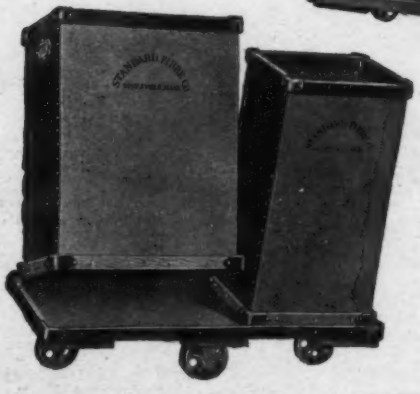
Campbell Manufacturing Company

Main Office
Slater Building
Worcester, Mass.

Factory
Barre Plains
Massachusetts

"The BEST Receptacles Made?"

"YES—and The Best That Can Be Made."



We aim constantly to improve specifications for EACH TYPE of fibre containers.
Quotations, etc., upon application.

STANDARD FIBRE CO.

MILLER STREET SOMERVILLE, MASSACHUSETTS

BUYERS' INDEX—Continued.

Carpet Machinery.
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Wks.
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Schofield, Wm. Co.
Smith & Furbush Mch. Co.
Textile Finishing Mchy. Co., The

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Casement Window Hardware.
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Lombard Foundry & Mch. Co.
McNaughton Mfg. Co.
Valley Iron Works.
Walsh & Weidner Boiler Co.

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Birmingham Slag Co.
Corrugated Bar Co.

Cement and Brick Coating.
Cooledge & Sons, F. J.
Dixon Crucible Co., Jos.
Pensalee-Gaulbert Co., Inc.
Patterson-Sargent Co.
Tropical Paint Co.
Wadsworth Howland & Co., Inc.

Centrifugals.
Cresson-Morris Co.

Chain Drives.
(See Belting—Chain Link.)

Chain (Block, Bicycle, Auto Engine, Agricultural, Etc.)
Morse Chain Co.

Chairs and Stools
Pick & Sons, Albert.
Reischmann Co.
Sani Products Co.
Wright Co.

Chemicals.
(See Dyestuffs and Chemicals.)

Chlorine Gas.
Electro Bleaching Gas Co.

Cleaning Machine (Suction)
United Electric Co.

Clocks (Hank, Etc.)
(See Counters.)

Clocks (Time).
See Clock Co.

Clocks (Watchman).
See Clock Co.
Chicago Watchman Clock Wks.
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(See Toilets.)

Cloth Cutters.
Firsching, J. A.
Wildman Mfg. Co.

Cloth Room Machinery.
Butterworth, H. W. & Sons Co.
Firsching, J. A.
Saco-Lowell Shops.
Scott & Co., Henry L.
Textile Finishing Machinery Co.
Wildman Mfg. Co.

Cloth Shrinking Machinery.
Reliance Machine Works.

Cloth Testers.
Scott & Co., Henry L.

Cloth Winders.
(See Winders)

Clutches (Friction.)
Carlyle-Johnson Mch. Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.

Clutch Linings.
Diamond State Fibre Co.

Coal Driers (Centrifugal).
Link-Belt Company.

Coal Handling Machinery.
Link-Belt Company.
Portable Machinery Co.

Coal Tar Disinfectants.
(See Disinfectants.)

Cocks.
(See Valves).

Color Pails.
(See Buckets—Mills.)

Color Testers.
Atlas Electric Devices Co.

Comb Aprons.
(See Aprons.)

Commission Merchants and Dealers.
(See Cotton Cloth Commission Merchants.)

Compressors, Air.
Allis-Chalmers Mfg. Co.
General Electric Co.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Walraven Co., The

Concrete Reinforcement.
Birmingham Slag Co.
Corrugated Bar Co.

Condensers.
Allis-Chalmers Mfg. Co.
Seeger Machine Tool Co.

Conduits.
Diamond State Fibre Co.

Conduits.
Crouse-Hinds Co.

Connectors (Frankel Solderless).
Westinghouse Elec. & Mfg. Co.

Consulting Engineers.
(See Architects & Engineer.)

Contractors and Engineers (Building).
Aberthaw Construction Co.
American City Eng'g Co.
Dowman, George.
Ferguson Co., Jno. W.
Industrial Welfare Builders.
Goode, R. L.
Gude, A. Co.
Robbins & Son, J. E.
Spiker & Lose.
Thompson & Binger.

Contractors (Electrical).
(See Electrical Engineers.)

Contractors (Painting).
Marshall Co., H. Newton.

Controlling Instruments (Temperature).
General Electric Co.
Powers Regulator Co.
Pagliabus Mfg. Co., C. J.
Taylor Instrument Co.

Conveyors (Belt).
(See Belt Conveyors.)

Conveying Machinery.
American Supply Co.
Collins, J. D.
Cresson-Morris Co.
Hulme, J. S.
Link-Belt Co.
Morse Chain Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Portable Machinery Co.
Richards-Wilcox Mfg. Co.
Seeger Machine Tool Co.
Schofield, Wm. Co.
Walraven Co.
Valley Iron Works.

Conveyors (Portable).
Portable Machinery Co.

Coolers.
(See Humidifying Apparatus.)

Coolers (Water).
(See Water Coolers.)

Cooling Towers.
(See Tanks and Towers.)

Copper Stamps and Stencils.
(See Stamps, Stencils, Etc.)

Cordage Machinery.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co.
The.

Corrugated Bars.
Corrugated Bar Co.

Cotton Yarn and Cloth Commission Merchants and Dealers.
Carver-Beaver Yarn Co., Inc.
Fawcett, Hughes.
Florsheim, H. A.
Hunter Mfg. & Comm. Co.
Iselin & Co., Wm.
Southern Cotton Yarn Co.
Weimar Bros.
Woodward Baldwin & Co.

Cotton Dealers and Brokers.
Beer, H. & B.
Cutts, E. A.
International Cotton Prod. Co.

Cotton Mill Machinery and Supplies.
Barber-Colman Co.
Butterworth & Sons, H. W.
Cocker Mch. & Foundry Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Firsching, J. A.
Fletcher Works.
Greist Mfg. Co.
Greenville Spool & Mfg. Co.
Howard & Bullough.
Jones Mchry. Corp.
Mason Machine Works.
Phila. Drying Mchy. Co.
Proctor & Schwartz, Inc.
Sargent's Sons, Corp., C. G.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield Co., Wm.
Slaughter Mchry. Co., G. G.
Smith & Furbush Mach. Co.
Stafford Co.
Steel Heddle Mfg. Co.
Terrell Machine Co.
Textile Finishing Machinery Co.
Universal Winding Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

Cotton Tape Loom.
Fletcher Works.
Schaum & Uhlinger.

Cotton Yarn Mills.
(See Yarn Manufacturers.)

Counters (Revolution, Hank, Pick, Etc).
Veeder Mfg. Co.
Precision Machine Co.

Counters (Restaurant).
(See Restaurant Equipment).

Couplings (Shaft).
Chicago Pulley & Shafting Co.
Cresson-Morris Co.

Covers (Roller).
Diamond State Fibre Co.

Cranes.
(See Hoists.)

Crayons.
Dixon Crucible Co., Jos.
Lovingood Co.
Lowell Crayon Co.
Regnas & Co., J. R.

Creosote Oil and Creosoting.
Gulf States Creosoting Co.

Crushing Machinery.
Allis-Chalmers Mfg. Co.

Cutters (Cloth).
(See Cloth Cutters.)

Cypress Lumber.
Southern Cypress Mfg. Asso.

Cutters (Thread).
(See Thread Cutters.)

Dairy Supplies.
Dairy & Farm Supply Co.
Hackney Bros. Co.

Deep Wells and Supplies.
Hughes Specialty Well Drilling Co.

Dehumidifying.
Sturtevant Co., B. F.

Delivery Cases.
(See Boxes—Packing.)

Dial Scales.
(See Scales).

Dies (Steel).
(See Stamps, Stencils, Etc.)

Directory (Textile Mill).
Davison Publishing Co.

Discs (Fibre).
Diamond State Fibre Co.

Dishes and Glassware.
Chattanooga Queensware Co.
Pick & Son, Albert.
Sani Products Co.
Wright Mfg. Co.

Disinfectants.
Barrett Co., The
Sanitas Co.

Dobby Chains.
Crompton & Knowles Loom Wks.
Whitin Machine Works.

Doffing Boxes (Mill).
(See Boxes—Mill.)

Doffing Cars.
(See Cars.)

Door Closers and Checks.
Richards-Wilcox Mfg. Co.

Door Hangers.
Dowman, George.
Richards-Wilcox Mfg. Co.

Door Mats (Steel).
Acme Steel Goods Co.

Lovingood Co.
Regnas & Co., J. R.

Draft Gauges.
See Gauges, Draft.

Drawing Frames.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Drills (Electric).
(See Electric Machinery.)

Drinking Fountains.
(See Fountains—Drinking.)

Drop Wires.
Greist Mfg. Co.
Steel Heddle Mfg. Co.

Drying Apparatus.
New York Blower Co.
Sturtevant Co., B. F.

Drying Forms (Hosiery).
Pearson, Jos. T.

Drying Machinery.
American Laundry Mchry. Co.
Butterworth, H. W. & Sons Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The

Dust Collectors.
(See Blowers and Blowing Systems.)

Dusting Machinery.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Dyers, Bleachers and Finishers.
American Processing Co.
King, Habersham.

Dyeing, Bleaching, Finishing and Printing Machinery.
American Laundry Mchry. Co.
Atlas Electric Devices Co.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Hulme, J. S.
Permutit Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Refinite Co.
Reliance Machine Works.
Rome Mch. & Fdry. Co.
Schaum & Uhlinger.
Textile Finishing Machinery Co., The
Tolhurst Machine Works.

Dye Sticks.
Phila. Drying Machinery Co.

Dyestuffs and Chemicals.
Althouse Chemical Co.
Aniline Dyes & Chemicals, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Barrett Co.
Borne, Scrymser Co.
Bosson & Lane.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Grasselli Chemical Co.
Hemingway Inc., Frank
Kali Mfg. Co.
Klipstein & Co., A.
Lewis, John D.
Metz & Co., H. A.
Moore Oil Refining Co.
National Aniline & Chemical Co.
National Oil Products Co.
Newport Chemical Works, Inc.
Roessler & Hasslacher Chemical Co.
Sonneborn Sons, Inc., L.
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Wolf & Co., Jacques
Zavon Co., Inc.

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United Electric Co.

Ejectors.
Sherwood Mfg. Co.

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(See Motors and Generators.)

Electric Fans.
(See Fans—Electric.)

Electric Lamps.
(See Lamps.)

Electric Lamp Guards.
Flexible Steel Lacing Co.

Electrical Engineers and Contractors.
Dixie Electrical Equipment Co.
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This is what he does

He pours a little black tarry liquid into a pail, perhaps half a cup full. Then fills it with water. It turns a milky white. Disinfectant you say. To all appearances, yes—but will it disinfect? After all, the real test of a disinfectant or a disinfectant solution is not its appearance or its price, but its action on germ life.

Here are two coal tar preparations side by side. You look them over; feel them; smell them; mix them with water; even have your chemist analyze them. But neither you nor your chemist could tell definitely their relative value. Yet one diluted with 500 parts water will kill a high concentratino of typhoid germs in two and one-half minutes; while the other, diluted with only 50 parts water will be ineffective. And so with your janitor's solution—it might have all the physical appearances of a disinfectant and still be of no more value than soapy water.

There is a way in which you may be sure that your disinfectant is effective when diluted—a way which will protect you against inferior or useless products. Reputable manufacturers now employ a recognized germicidal test for determining the efficiency of coal tar disinfectants using pure carbolic acid as the standard of measurement. For your own protection insist that your disinfectant be guaranteed by the supplier as to its germicidal strength in comparison with carbolic acid.

Sanitas coal tar disinfectants are manufactured on this basis—under the constant control of a bacteriological laboratory. They are guaranteed to give protection because they are known from actual tests to destroy germ in the dilution recommended. We will be glad to tell you about them and send samples if you wish.

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Carter Electric Co.
Crouse-Hinds Co.
Cutter Co., George.
Dixie Electrical Equipment Co.
Economy Fuse & Mfg. Co.
General Electric Co.
Hulme, J. S.
Jones Mchry. Corp.
Multiple Electric Products Co.
Seeger Machine Tool Co.
Slaughter Mchry. Co., G. G.
United Electric Co.
Walraven Co., The
Walsh & Weidner Boiler Co.
Westinghouse Electric & Mfg. Co.

Electrical Repairing (all kinds).
Bryan Electric Co.
Dixie Electrical Equipment Co.

Electric Tractors and Trucks.
(See Tractors & Trucks—Elec.)

Elevators (Portable).
Collins, J. D.
Lovingood Co.

Elevators.
Link-Belt Company.
Seeger Machine Tool Co.

Enamel—Mill White.
(See Paint).

Engineers (Mill).
(See Architects.)

Engines—Oil, Gas and Gasoline.
Seeger Machine Tool Co.

Engines—Steam.
Allis-Chalmers Mfg. Co.
Jones Mchry. Corp.
Lombard Iron Works & Supply Co.
Schofield's Sons Co., J. S.
Toomey, Frank
Walsh & Weidner Boiler Co.

Engine Room Appliances and Supplies.
Crane Co.
Cutter Co., George.
Graton & Knight Mfg. Co.
Jenkins Bros.
Lunkenheimer Co.
Slaughter Mchry. Co., G. G.
Sherwood Mfg. Co.
Walraven Co.

Exporters (Cotton).
(See Brokers.)

Extractors—Hydro.
American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

Fans—Electric.
Allis-Chalmers Mfg. Co.
American Blower Co.
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Fans—Conveying, Power and Exhaust.
(See Blowers and Blowing Systems.)

Fasteners (Belt).
(See Belt Fasteners.)

Feed Water Purifiers.
(See Boiler Feed Water Purification).

Felting Machinery.
Smith & Furbush Mch. Co.

Fence—Steel and Iron.
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Cyclone Fence Co.
Dowman, George.

Fibre Products.
Diamond State Fibre Co.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.

Filters—Water.
American Water Softener Co.
Boromite Co. of America.
Hulme, J. S.
Permutit Co.
Refinite Co.
Scaife & Sons Co., Wm. B.

Filters (Oil Removal).
Permutit Co.
Sherwood Mfg. Co.

Filters (Sand).
Permutit Co.

Finishing.
(See Dyers, Bleachers and Finishers.)

Finishing, Bleaching and Sizing Materials.
Althouse Chemical Co.
Atlantic Dyestuff Co.
Aniline Dyes & Chemical, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Barrett Co.
Berne, Schrymser Co.
Bosson & Lane.
Corn Products Refining Co.
Dobbins Soap Mfg. Co.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Electro Bleaching Gas Co.
Grasselli Chemical Co.
Kali Mfg. Co.
Keever Starch Co.
Klipstein & Co., A.
National Oil Products Co.
Newport Chemical Works.
Metz & Co., H. A.
Moore Oil Refining Co.
National Aniline & Chemical Co.
Roessler & Hasslacher Co. Co.
Sonneborn Sons, Inc., L.
United Chemical Products Corp.
Warren Soap Mfg. Co.
Wolf & Co., Jacques
Zavon Co., Inc.

Fire Alarm Apparatus.
Dixie Electric Equip. Co.

Fire Doors and Hardware.
Dowman, George.
Richards-Wilcox Mfg. Co.

Fire Hose.
(See Hose—Fire.)

Fire Protecting Paint.
(See Paint).

First Aid Room Equipment.
(See Hospital Equipment.)

Flexible Couplings.
Cresson-Morris Co.

Flood Lights (Elec.)
Crouse-Hinds Co.
General Electric Co.

Flooring (Hardwood).
Kirkpatrick Lum. & Timber Co.
Nashville Hardwood Flooring Co.
Southern Cypress Mfg. Co.

Floor Scrubbing Machine.
American Scrubbing Machine Co.

Fluted Rolls.
Campbell Mfg. Co.
Howard & Bullough.
Perkins & Son, B. F.
Saco-Lowell Shops.
Schofield's Sons Co., J. S.
Smith & Furbush Machine Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Flyers.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Founders.
Cresson-Morris Co.
Lombard Fdry. &Mch. Works.

Fountains (Drinking).
Central Brass Mfg. Co.
Crane Co.
Rundle-Spence Mfg. Co.
Southern States Supply Co.

Friction Clutches.
(See Clutches—Friction.)

Fuses.
(See Elec. Mchy. and Supplies.)

Garage Doors and Door Hardware.
Dowman, George.
Richards-Wilcox Mfg. Co.

Garnett Machines.
Roy Son Co., B. S.
Smith & Furbush Mach. Co.

Gas Engines.
(See Engines—Gas.)

Gaskets.
Diamond State Fibre Co.
Graton & Knight Mfg. Co.

Gauge Cocks.
Lunkenheimer Co.

Gauges—Draft.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Gauges—Mercury Column Vacuum.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Gauges—Oil.
Lunkenheimer Co.

Gauges (Pressure).
Tagliabue Mfg. Co., C. J.

Gauges (Recording).
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co

Gauges—Water.
Lunkenheimer Co.

Gears—Silent.
Diamond State Fibre Co.
General Electric Co.
Link-Belt Company.
Morse Chain Co.

Gear Cutting and Cutters.
Cresson-Morris Co.
Southern Welding & Machine Co.
Whitin Mch. Co., D. E.

Gear Pullers.
General Electric Co.
Greb Co., Inc.

Generators—Electric.
(See Motors and Generators.)

Glassware and Dishes.
(See Dishes).

Governors (Pressure).
Tagliabue Mfg. Co., C. J.

Governors (Pump).
General Electric Co.
Tagliabue Mfg. Co., C. J.

Graphite—Products.
Dixon Crucible Co., Jos.

Grates (Boiler).
International Eng. Works.
Lombard Fdy. & Mch. Co.
McNaughton Mfg. Co.

Grates (Mechanical).
See Stokers).

Grease.
(See Lubricants.)

Grease Cups.
(See Lubricators.)

Green Houses.
Hulme, J. S.

Grindstones.
Richards-Wilcox Mfg. Co.

Grinders—Card, Cylinder Roll, Napper and Garnett.
(See Card Grinding Machinery.)

Guards (Elec. Lamp.)
Flexible Steel Lacing Co.

Guides (Thread).
Mitchell-Bissell Co.
Palmer Co., I. E.

Gums.
(See Finishing and Sizing Materials.)

Guy Anchors.
Crouse-Hinds Co.

Hangers.
(See Shafting and Hangers.)

Harness—Loom.
American Supply Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Greist Mfg. Co.
Garland Mfg. Co

Heads (Bobbin & Spool).
Diamond State Fibre Co.

Heating and Ventilating Apparatus.
(See Ventilating Apparatus.)

Heddles.
Crompton & Knowles Loom Wks.
Draper Corporation.
Steel Heddle Mfg. Co.

Heddle Frames.
Crompton & Knowles Loom Wks.
Steel Heddle Mfg. Co.

Hinges & Butts.
McKinney Mfg. Co.

Hoists.
Hulme, J. S.
Link-Belt Company.
Morse Chain Co.
Seeger Machine Tool Co.
Walraven Co.

Hose—Fire.
Collins, J. D.
Goodyear Tire & Rubber Co.
U. S. Rubber Co.

Hosiery Dyeing Machinery.
Cocker Mch. & Fdry. Co.
Rome Mach. & Fdry. Co.

Hosiery Finishing Boards.
(See Boards.)

Hosiery Forms.
(See Drying Forms.)

Hosiery Yarns.
(See Yarn Manufacturers.)

Hospital Equipment.
Thomas Co., F. H.
Sani Products Co.
Wright Co.

Hotels.
Sinton.

Houses (Ready-Made).
Dowman, George.
Industrial Welfare Builders.
Tuxbury Lumber Co.

Humidifying Apparatus.
American Blower Co.
Carrier Eng. Corp.
New York Blower Co.
Parks-Cramer Co.
Sturtevant Co., B. F.

Humidity Indicating Instruments.
Powers Regulator Co.
Tagliabue Mfg. Co., C. J.
Taylor Inst. Co.

Hydraulic Turbines.
(See Turbines—Steam.)

Hydro Extractors.
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Hydrometers.
Taylor Instrument Co.

Hygrometers.
Taylor Instrument Co.

Hygrodeiks.
Taylor Instrument Co.

Indicating and Recording Instruments and Thermometers.
General Electric Co.
Powers Regulator Co.
Taylor Instrument Co.
Tagliabue Mfg. Co., C. J.

Indigo.
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Industrial Relationship Service.
Sherman Service, Inc.

Injectors.
Lunkenheimer Co.
Sherwood Mfg. Co.

Insulation (Vulcanized Fibre).
Diamond State Fibre Co. Bal

Insurance.
Employers Mutual Insurance Co.
Miller Indemnity Underwriters.

Ink—Stencil and Marking.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Lovingood Co.
National Marking Machine Co.
Regnas & Co., J. R.

Iron Work—Ornamental.
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Cyclone Fence Co.
Dowman, George.
Dufur & Co.
Lombard Iron Works & Supply Co.

Jacks.
Paulus, Chas. B.

Jacquards.
Crompton & Knowles Loom Wks.

Jute Bagging Machines.
Smith & Furbush Mach. Co.

Kettles—Size.
(See Size Kettles.)

Kettles—Soda.
Lombard Iron Works & Sup. Co.

Kiers.
(See Bleaching Kiers.)

Knit Goods Specialties.
Knit Goods Specialty Co.

Knit Goods.
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Knit Goods Washers.
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Knitting Machinery and Supplies.
Adams Co., Geo. H.
Brinton Co., H.
General Machine Works.
Hemphill Mfg. Co.
Scott & Williams.
Wildman Mfg. Co.

Laboratory Instruments & Thermometers.
Tagliabue Mfg. Co., C. J.

Lacing (Belt).
(See Belt Lacing.)

Lamps—Incandescent and Arc.
Benjamin Electric Co.
Boston Economy Lamp Div.
Bryan Electric Co.
Carter Electric Co.
Crouse-Hinds Co.
Cutter Co., George.
General Electric Co.
Jones Mchry. Corp.
Walraven Co.
Westinghouse Lamp Co.

Lamp Guards (Key Locking).
Flexible Steel Lacing Co.

Lamp Reflectors.
Benjamin Electric Co.
Bryan Electric Co.
Carter Elec. Co.
Crouse-Hinds Co.
Cutter Co., George.
Ivanhoe-Regent Works.

Landscape Architects.
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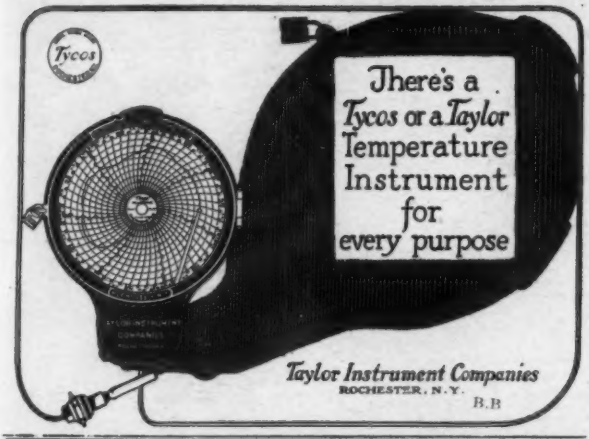
Lappers.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Latch Needles.
Paulus, Chas. B.

Laundry Machinery.



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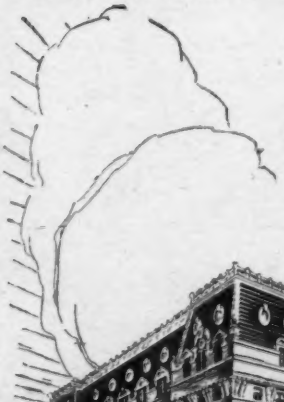

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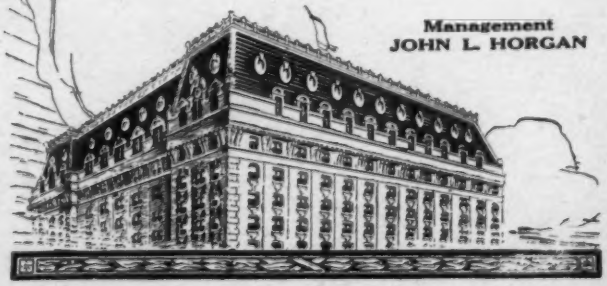

BUYERS' INDEX—Continued.

Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Wks.

Lavatories.
Crane Co.
Jos. A. Vogel Co.

Leather Belting.
(See Belting.)

Leather Specialties.
American Supply Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Williams & Sons, I. B.

Lights (Flood).
Crouse-Hinds Co.

Linen Yarns.
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Link Belting.
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Linters.
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Liquid Chlorine.
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Loaders—Wagon and Trucks.
Link-Belt Company.
Portable Machinery Co.

Locks and Latches.
Richards-Wilcox Mfg. Co.

Lockers (Metal).
Collins, J. D.
Dowman, George.
Medart Mfg. Co., Fred.
New York Machinery Co.

Logwood Extract.
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Looms.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Jones Mchry. Corp.
Mason Machine Works.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield, Wm. & Co.
Slaughter Mchry. Co., G. G.
Stafford Co., The

Loom Attachments (Automatic).
Draper Corporation.

Loom Harness.
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Lubricants.
Dixon, Jos., Crucible Co.
N. Y. & N. J. Lubricant Co.
Swan & Finch Co.
Texas Co.

Lubricators.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.
Sherwood Mfg. Co.

Lug Straps.
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Lumber.
Kirkpatrick Lumber & Timber Co.
Southern Cypress Mfg. Asso.
Tuxbury Lumber Co., A. C.

Lunch Room Equipment.
(See Restaurant.)

Machine Tools.
(See Tools.)

Machinists.
Cresson-Morris Co.

Marking (Dry Transfer).
Kaumagraph Co.

Marking Pots, Stencils, Inks, Etc.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.

Mercerized Yarns.
(See Yarn Manufacturers).

Mercerizing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

Metal Ceilings, Etc.
Dowman, George.
Lupton's Sons Co., David

Metals (Perforated).
(See Screens and Sieves.)

Metal Workers—Sheet.
Dowman, George.
Lombard Iron Works & Supply Co.

Meters—Flow, Air, Gas, Electric, Steam, Etc.
Allis-Chalmers Mfg. Co.
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
General Electric Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.
Westinghouse Elec. & Mfg. Co

Meters (Revolution).
Taylor Instrument Co.

Mill Baskets and Boxes.
(See Boxes—Mill.)

Mill Engineer.
(See Architects and Engineers.)

Mill Villages.
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Mill Supplies (Misc.).
(See Supplies—Mill).

Mill White Paint.
(See Paint).

Monorail Conveying Systems.
Richards-Wilcox Mfg. Co.

Motors and Generators—Electric.
Allis-Chalmers Mfg. Co.
Bryan Electric Co.
Carter Electric Co.
Dixie Electrical Equipment Co.
General Electric Co.
Hulme, J. S.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Walraven Co., The
Westinghouse Elec. & Mfg. Co.

Moving Picture Mach. & Supplies.
(See Theatre Equipment).

Nails—Cement Coated.
Lovingood Co.
Regnas Co., J. R.

Nappers.
Roy & Son Co., B. S.

Needles—Latch.
Paulus, Chas. B.

Oils.
Hampden Paint & Chem. Co.
Johnson & Co., Inc., Oliver.
Patterson-Sargent Co.
Southern Cotton Oil Co.
Wadsworth, Howland & Co., Inc.

Oils—Finishing
(See Finishing and Sizing Materials.)

Oils—Lubricating.
(See Lubricants.)

Oil Cups.
(See Lubricators.)

Oil Paper.
Bradley Mfg. Co., A. J.

Oil Tanks & Pumps.
Wayne Oil Tank & Pump Co.

Oil Testing Instruments.
Tagliabue Mfg. Co., C. J.

Oiling Devices.
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Openers for Cotton, Wool, Waste Etc.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Organs.
Stieff, Inc., Chas. M.
Schofield Auto Music Co.

Oxidizing Machinery.
Phila. Drying Machinery Co.

Oxygen.
Commercial Acetylene Supply Co
Linde Air Products Co.
Oxweld Acetylene Co.
Prest-O-Lite Co.
Standard Gas Products Co.
Standard Welding & Machine Co.
Waterhouse Welding Co.

Packing Boxes & Cases (Wooden).
Hightower Box & Tank Co.
Walke Box Co., Inc.
Wall & Son, C. M.

Packings.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jenkins Bros.
Walraven Co.
U. S. Rubber Co.

Paint.
Barrett Co., The
Cooledge & Sons, F. J.
Du Pont de Nemours & Co., E. I.
Gulf States Creosoting Co.
Hampden Paint & Chem. Co.
High-Grade Mfg. Co.
Johnson Paint Co.
Johnson & Co., Inc., Oliver.
Patterson Sargent Co.
Pessiee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

Painting Contractors.
Marshall Co., H. Newton.

Panel Boards.
(See Switchboards).

Paper.
Bradley Mfg. Co., A. J.
Diamond State Fibre Co.

Perforated Metal.
(See Screens and Sieves.)

Peroxides.
Roessler & Hasslacher Chemical Co.

Pianos & Players.
Scofield Auto Music Co.
Stieff, Chas. M.

Pickers—Curled Hair.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.

Pickers—Leather.
Garland Mfg. Co.

Picker Sticks.
Garland Mfg. Co.

Picking Machinery.
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Pinions.
Diamond State Fibre Co.
General Electric Co.

Pipe and Pipe Fittings.
Crane Co.
Lunkenheimer Co.
Parks-Cramer Co.
Scaife & Sons Co., Wm. B.
Walraven Co.

Pipe Organs.
Scofield Auto Music Co.

Pipe Threading & Cutting Machines.
Seeger Machine Tool Co.
Walraven Co., The

Playground Equipment.
Hill-Standard Co.
Medart Mfg Co., Fred.

Pool Tables, Etc.
Brunswick-Balke-Collender Co.

Power Transmission.
Aldrich Mch. Wks.
Allis-Chalmers Mfg. Co.
Carlyle-Johnson Mch. Co.
Carolina Supply Co.
Cresson-Morris Co.
Chicago Pulley & Shafting Co.
Dodge Sales & Eng. Co.
General Electric Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Hyatt Roller Bearing Co.
Jewell Belting Co.
Jones Mchry. Corp.
Ladew & Co., Inc., Edw. R.
Link-Belt Company.
Morse Chain Co.
Russell Mfg. Co.
S K F Industries.
Seeger Machine Tool Co.
Slaughter Mchry. Co., G. G.
Standard Pressed Steel Co.
Stanley Belting Corp.
U. S. Ball Bearing Co.
U. S. Rubber Co.
Valley Iron Works.
Walraven Co., **The**
Westinghouse Elec. & Mfg. Co.
Williams & Sons, I. B.

Presses.
American Laundry Machy. Co.
Butterworth & Sons Co., H. W.
Economy Baler Co.
Galland-Henning Mfg. Co.
Lovingood Co.
Phila. Drying Mch. Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Seeger Machine Tool Co.
Smith & Furbush Mch. Co.
Textile Finishing Machinery Co., The

Pulleys.
Chicago Pulley & Shafting Co.
Cresson-Morris Co.
Diamond State Fibre Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Seeger Machine Tool Co.
Valley Iron Works.
Walraven Co., **The**

Pulley Covering.
Goodyear Tire & Rubber Co.
Stanley Belting Corp.
Williams & Sons, I. B.

Pumps.
Allis-Chalmers Mfg. Co.
Hughes Specialty Well Drilling Co.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Textile Finishing Machinery Co.
Toomey, Frank
Walraven Co.
Walsh & Weidner Boiler Co., The
Westinghouse Elec. & Mfg. Co.

Pump Valves.
(See Valve Discs.)

Psychrometers (Sling).
Taylor Instrument Co.

Pyrometers.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Quill Cleaning Machines.
Terrell Mch. Co.
Dufur & Co.

Receptacles (Fibre).
(See Fibre Products.)

Recording Instruments.
General Electric Co.
Powers Regulator Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Recorders (Draft).
Tagliabue Mfg. Co., C. J.

Recorders (Pressure).
Tagliabue Mfg. Co., C. J.

Recorders (Temperature).
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Reeds.
American Supply Co.
Emmons Loom Harness Co.

Reels.
Cocker Mch. & Fdry. Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Saco-Lowell Shops.
Schofield, Wm. Co.
Whitin Machine Works.

Reflectors (Lamp).
(See Lamp Reflectors.)

Regulators (Condensate).
Tagliabue Mfg. Co., C. J.

Regulators (Liquid Level).
General Electric Co.
Tagliabue Mfg. Co., C. J.

Refrigerating Machines.
Southern States Supply Co.

Regulators—Pressure.
General Electric Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Regulators—Temperature.
(See Temperature Controllers.)

Regulators (Time).
Tagliabue Mfg. Co., C. J.

Reinforcing Slag.
Birmingham Slag Co.

Reinforcement Bars for Concrete.
Corrugated Bar Co.

Repairing (Electrical).
Jones Mchry. Corp.
Westinghouse Electric & Mfg. Co.

Repairing (Textile Mchry, etc).
Atlanta Welding Co.
Chattanooga Brasing & Welding Co.
General Machine Works.
Southern Spindle & Flyer Co.
Standard Gas Products Co.

Restaurant Equipment.
Chattanooga Queensware Co.
Reischmann Co.
Pick & Co., Albert
Sani Products Co.
Wright Co.

Rib Top Cutters.
General Machine Works.
Wildman Mfg. Co.

Ring Travelers—Steel and Bronze.
Whitinsville Spining Ring Co.
Whitin Machine Works.

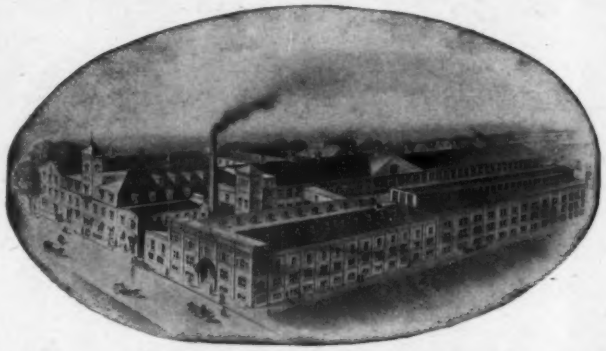
Rings—Spinning.
(See Spinning Rings.)

Rivets (Belt).
Crescent Belt Fastener Co.

Rocker Shaft Bearings.
(See Bearings.)

Rolls (Calender.)
Butterworth & Sons Co., H. W.
Campbell Mfg. Co.
Perkins & Son, B. F.
Roy & Son Co., B. S.
Textile Finishing Machinery Co.

Rolls (Rubber Covered).
American Wringer Co.
Butterworth & Sons Co., H. W.
Campbell Mfg. Co.
Perkins & Son, B. F.
Textile Finishing Machinery Co.



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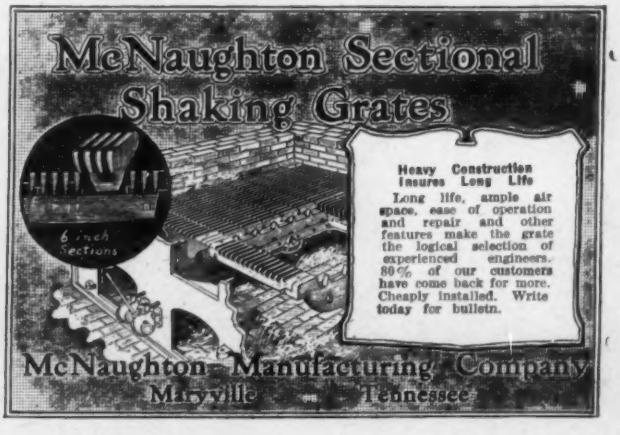
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Perkins & Son, B. F.
Southern Spindle & Flyer Co.
Textile Finishing Machinery Co.

Rolls (Top).
Campbell Mfg. Co.

Roofing.
Barrett Co., The
Cooledge & Sons, F. J.
High-Grade Mfg. Co.
Cortright Metal Roofing Co.
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Johnson Paint Co.
Kirkpatrick Lum. & Timber Co.
Pessloe-Gaulbert Co., Inc.
Wadsworth, Howland & Co.
Walraven Co.

Roofing Felt and Pitch.
High-Grade Mfg. Co.

Roof and Cement Coating.
Barrett Co.
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Du Pont de Nemours & Co., E. I.
Hampden Paint & Chemical Co.
High-Grade Mfg. Co.
Johnson & Co., Inc., Oliver.
Johnson Paint Co.
Patterson Sargent Co.
Pessloe-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co.

Rope—Transmission.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Walraven Co.

Roving Cans and Trucks.
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Roving Machinery.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Rubber Stamps.
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Rubber Goods.
Goodyear Tire & Rubber Co.
U. S. Rubber Co.

Sanitary Products.
Chattanooga Queensware Co.
Crane Co.
Dail Steel Products Co.
Hackney Bros. Co.
Rundle-Spence Mfg. Co.
Sanitas Co.

Sani Products Co.
United Electric Co.
Vogel Co., Jos. A.

Sash-Window—Steel.
Detroit Steel Products Co.
Dowman, George.
Lupton's Sons Co., David

Scales.
American Kron Scale Co.
Lovingood Co.
Torsion Balance Co.

Scale Preventer (Boiler).
(See Boiler Feed Water Purification.)

Screens & Sieves—Perforated.
Erdle Perforating Co.
Link-Belt Company.

Scrubbing Machine—Floor.
American Scrubbing Mch. Co.

Second Hand Machinery & Supplies.
Jones Mchry. Corp.
Toomey, Frank, Inc.
Walraven Co.

Sewing Machines.
Merrow Machine Co., The
Textile Finishing Mchy. Co.
Wilcox & Gibbs Sewing Mach. Co.

Shades (Electric Lamp).
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Shafting & Hangers.
Chicago Pulley & Shafting Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Co.
Seeger Machine Tool Co.
S K F Industries.
Standard Pressed Steel Co.
Valley Iron Works.
Walraven Co., The

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Roy & Son Co., B. S.

Shelving—Sectional Steel.
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Dowman, George.
Hyatt Roller Bearing Co.
Lupton's Sons Co., David
Medart Mfg. Co., Fred.
New York Machinery Co.

Shingles—Asphalt.
Barrett Co.

Shingles—Metal.
Cortright Metal Roofing Co.
Dowman, George.

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Kirkpatrick Lum. & Timber Co.
Southern Cypress Mfg. Asso.

Shipping Room Machinery and Supplies.
Acme Steel Goods Co.
American Kron Scale Co.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Collins, J. D.
Diamond State Fibre Co.
Elwell-Parker Elec. Co.
Handy Equip. Corp.
Hightower Box & Tank Co.
Hulme, J. S.
Keystone Fibre Co.
Lane & Bro., W. T.
Lovingood Co.
McKinney Mfg. Co.
Regnas & Co., J. R.
Rogers Fibre Co.
Standard Fibre Co.
Seeger Machine Tool Co.
Signode System, Inc.
Torsion Balance Co.
Walraven Co., The
Wilke Box Co., Inc.
Wall & Son, C. M.

Shower Baths.
Crane Co.

Shuttles.
Crompton & Knowles Loom Wks.
Draper Corporation.
Shambow Shuttle Co.

Sinkers.
Paulus, Chas. B.

Singeing Machinery.
Butterworth & Sons Co., H. W.
Phila. Drying Machine Co.
Textile Finishing Machinery Co., The

Size Box Temperature Controller.
Powers Regulator Co.
Taylor Instrument Co
Tagliabue Mfg. Co., C. J.

Size Kettles.
Butterworth, H. W. & Sons Co.
Howard & Bullough, American Machine Co.
Lombard Iron Works & Sup. Co.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The

Sizing and Finishing Compounds.
(See Finishing & Sizing Materials.)

Skewers.
Greenville Spool & Mfg. Co.
Jordan Mfg. Co.

Skylights—Steel.
Detroit Steel Products Co.
Dowman, George.
Lupton's Sons, Co., David

Slag for Concrete.
Birmingham Slag Co.

Slashers and Slasher Room Supplies.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Howard & Bullough.
Lovingood Co.
Mossberg Co., Frank
Regnas & Co., J. R.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The

Slasher Tape.
(See Tape—Slasher.)

Slate Asphalt Roofing.
Barrett Co.

Sliding Partition Hardware.
Richards-Wilcox Mfg. Co.

Slubbers.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Soap—Textile.
Althouse Chemical Co.
Aniline Dyes & Chemicals, Inc.
Arnold, Hoffman & Co.
Borne, Scrymser Co.
Dobbins Soap Mfg. Co.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Grasselli Chemical Co.
Kali Mfg. Co.
Hemingway & Co., Frank
Klipstein & Co., A.
Newport Chemical Works.
Pick & Co., Albert
United Chemical Products Corp.
Warren Soap & Mfg. Co.
Wolf & Co., Jacques

Soda Ash.
Klipstein & Co., A.

Softeners—Cotton.
Althouse Chemical Co.
Aniline Dyes & Chemicals, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Borne, Schrymser Co.
Bosson & Lane.
Dow Chemical Co.
Durex Chemical Co.
Du Pont de Nemours & Co., E. I.
Grasselli Chemical Co.
Hemingway & Co., Frank
Kali Mfg. Co.
Klipstein & Co., A.
Moore Oil Refining Co.
Newport Chemical Works.
National Oil Products Co.
Pick & Co., Albert
Roessler & Hasslacher Chemical Co.
Sonneborn Sons, Inc., L.
United Chemical Products Corp.
Wolf & Co. Jacques
Zavon Co., Inc.

Softeners—Water.
(See Water Softeners.)

Solderless Connectors (Franked.)
Westinghouse Elec. & Mfg. Co.

Solvents.
(See Finishing.)

Sorting Table Tops.
Pick & Co., Albert
Reischmann Co.
Sani Products Co.

Spindles.
Allen Spindle Corp.
Draper Corporation.
Saco-Lowell Shops.
Southern Spindle & Flyer Co
Whitin Machine Works.

Spindles—Ball Bearing.
Allen Spindle Corp.

Spinners.
Arkray Mills, Inc.
Arlington Cotton Mills.
Arrow Mills, Inc.
Flint Mfg. Co.
Fletcher Works.
Florsheim, H. A.
Gray Mfg. Co.
Hunter Mc. & Comm. Co.
Myrtle Mills, Inc.
Parkdale Mills, Inc.

Spinning Frames.
American Machine Co., H. & B.
Crompton & Knowles Loom Wks.
Howard & Bullough.
Schaum & Uhlinger.
Saco-Lowell Shops.
Whitin Machine Works.

Spinning Rings.
Draper Corporation.
Howard & Bullough.
Greenville Spool & Mfg. Co.
Greist Mfg. Co.
Whitin Machine Wks.
Whitinsville Spinning Ring Co.

Spinning Tape Specialists.
American Textile Banding Co. Inc.
Barber Mfg. Co.
Campbell Mfg. Co.
Knit Goods Specialty Co.

Spooling Machinery.
Draper Corporation.
Saco-Lowell Shops.
Smith & Furbush Machine Co.
Whitin Machine Works.

Spools & Skewers.
Greenville Spool & Mfg. Co.

Sprinkler Tanks.
(See Tanks, Towers, Etc.)

Sprockets.
Link-Belt Company.
Morse Chain Co.
Valley Iron Works.

Stamping (Dye Transfer System).
Kaumagraph Co.

Stamps, Stencils and Stencil Machines.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.
Southern Stamp & Stencil Co.

Stand Pipes.
(See Tanks, Towers, Etc.)

Starch & Gums.
(See Finishing and Sizing Materials.)

Steam Engines.
(See Engines—Steam.)

Steam Hose.
(See Hose—Steam.)

Steam Pumps.
(See Pumps—Steam.)

Steam Traps.
(See Traps—Steam.)

Steel Buildings.
Dowman, George.

Steel Doors, Window, Partition, Etc.
Detroit Steel Products Co.
Dowman, George.
Lupton's Sons Co., David

Steel Lockers.
(See Lockers.)

Stencils & Stencil Papers.
(See Stamps and Stencils.)

Stencil Brushes.
(See Marking Pots and Brushes.)

Stencil Cutting Machines.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.
Southern Stamp &Stencil Wks.

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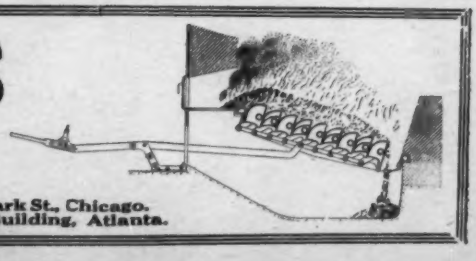

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This is an especially prepared tallow for softening all counts of cotton yarns. We absolutely assure you it will produce any amount of softening desired. In addition to this it will prevent any sticking of the yarn to the slasher cylinders and also cause the yarn to open perfectly at the lease. On light pick goods it can be used alone, however, we recommend the use of our Gum G in connection with it on goods of 48 picks or more. To be used on either white or colored goods.

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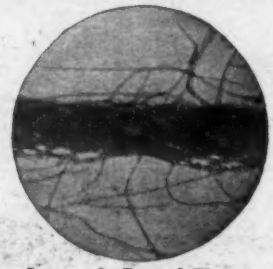

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Properly Dressed Warp

It costs you valuable production if your warp shows "flake off" and consequent break-off and mildew. Beef tallow, starch and water alone cannot prevent your warp from becoming like the micro-photograph at the left.

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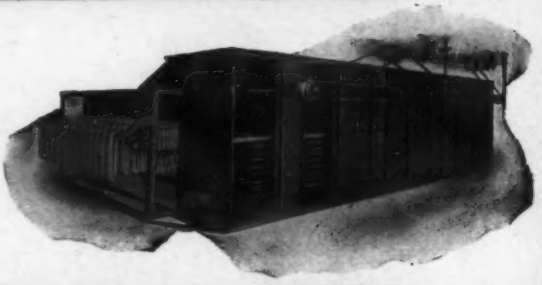

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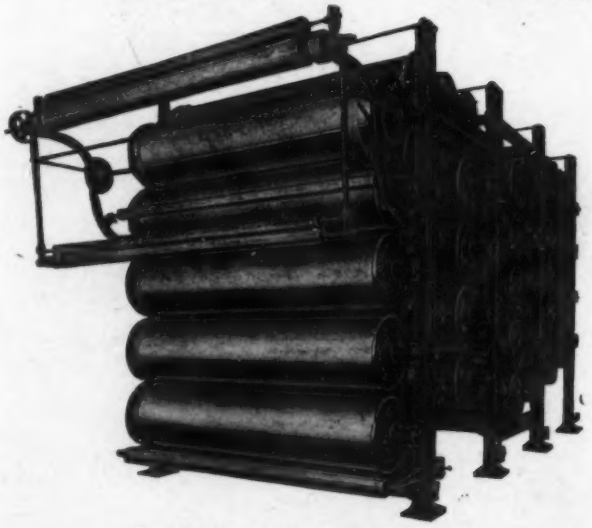

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Schofield Patent Automatic Opener and Duster.

For opening and dusting Wool, Cotton, Linters, Hair and kindred fibrous substances.

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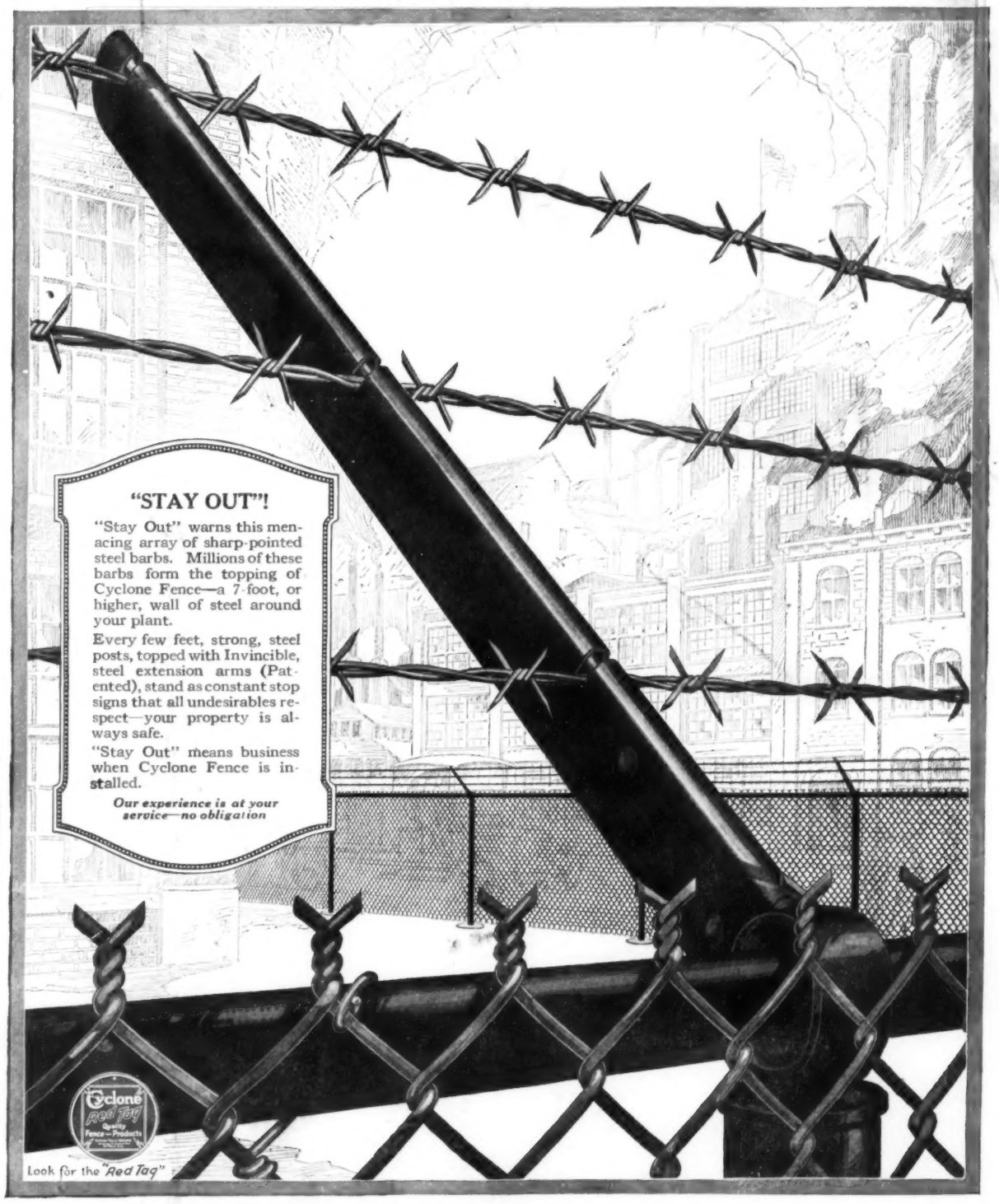
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Graton & Knight

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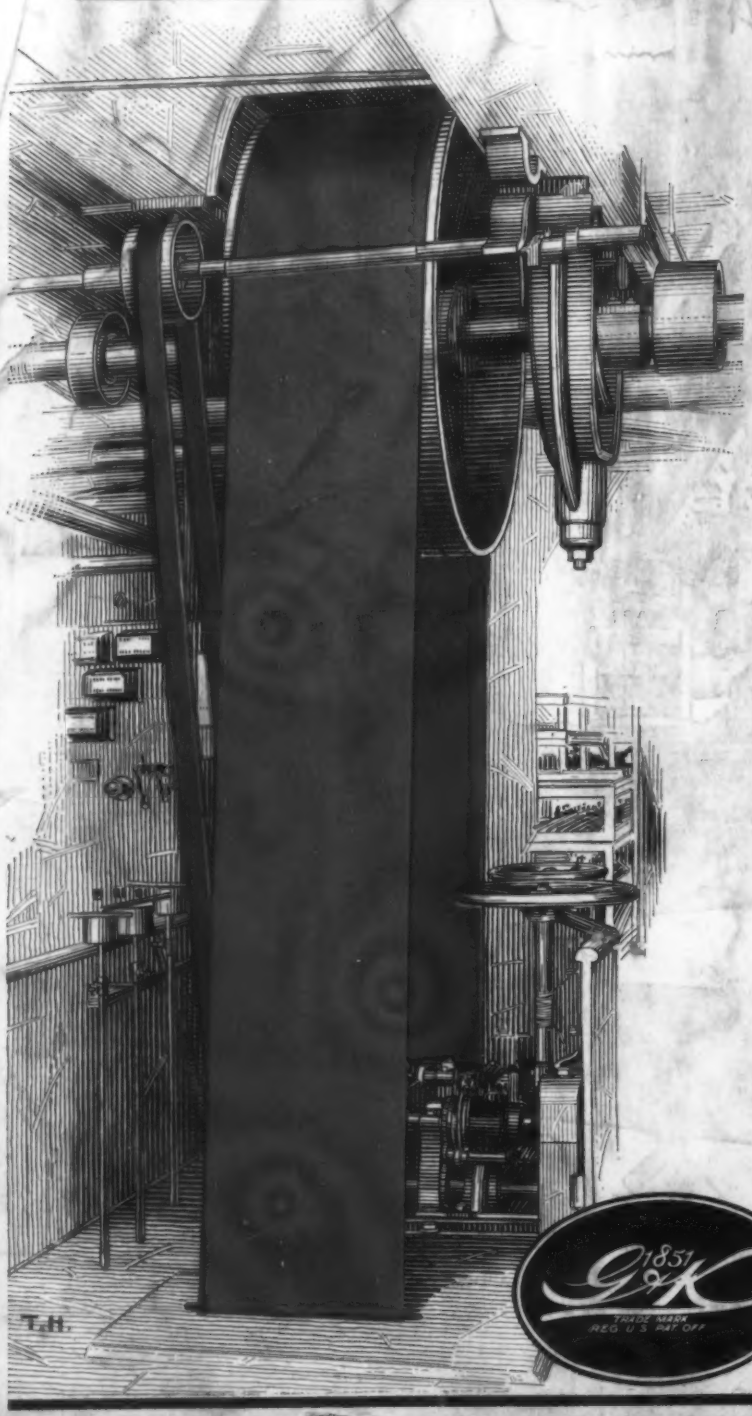
Tanned by us for belting use



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In 1872 the belt was placed on a water-wheel drive in a woolen mill at Central Falls, R. I. For thirty-three years it did its work well. The plant was shut down in 1903 and was not reopened until 1907, when the Central Falls Mazda Lamp Division bought the property.

Upon inspection the wheel-pit and part of the belt were found covered with rubbish. The belt was a sorry sight, and the first decision was to junk the mess. Cleaning operations, however, showed that the belt was practically uninjured. The power was turned on, the belt picked up its load, and has been carrying it ever since, driving a sixty-eight-inch pulley from a ninety six-inch wheel.

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